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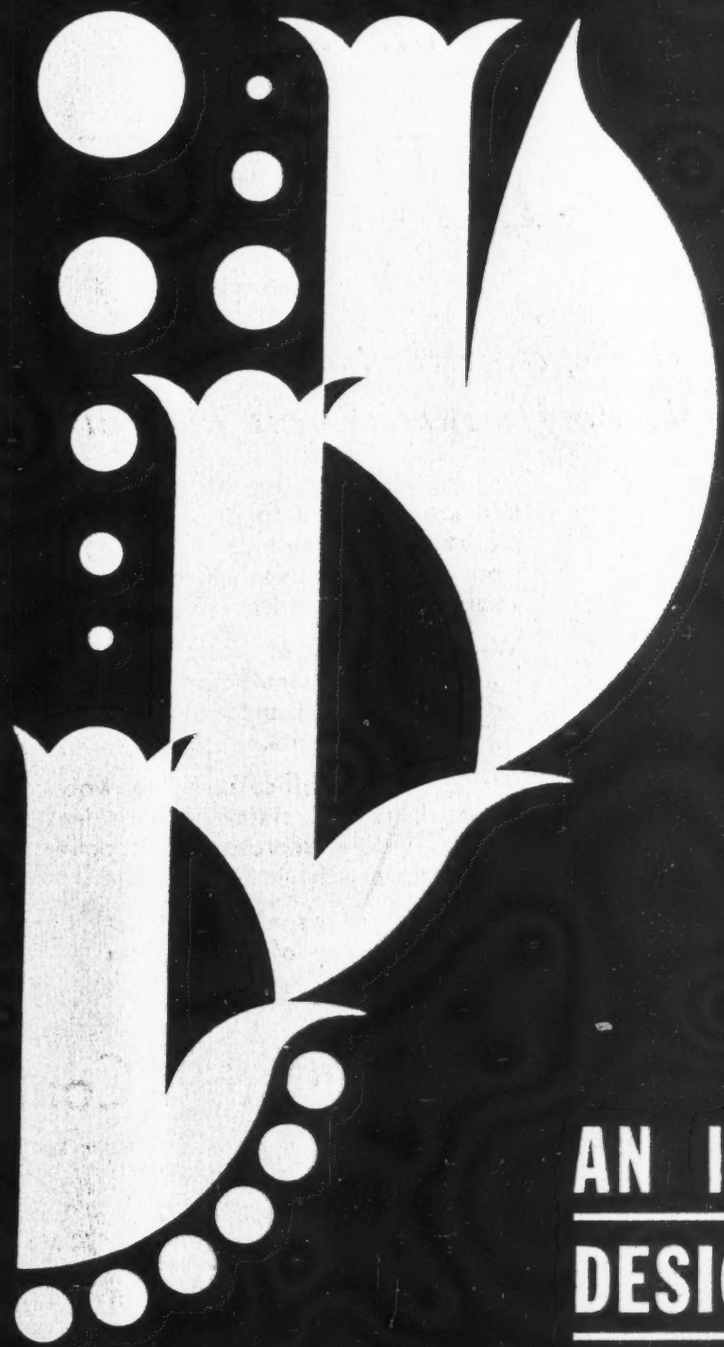
MARCH 1936
VOL. 37 No. 9

DESIGN



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DESIGN

CREATIVE ARTS • INDUSTRY • EDUCATION • LEISURE

FELIX PAYANT, Editor

VOL. 37 No. 9

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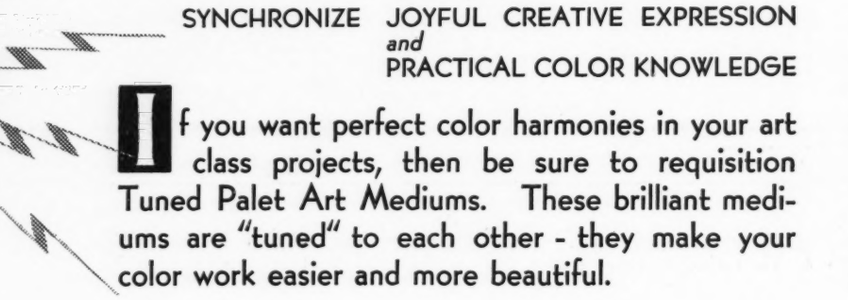

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THE EDITOR'S PAGE

One of the most interesting developments of our time is the positive and general interest in industrial design. This is significant, for it indicates a revived interest in art and an understanding of the materials and means with which commodities can be produced in quantity at low cost, so that practically everyone can own the kind of things which add most to his life in efficiency, economy and beauty. The machine, thought of for so many years as the enemy of art, has finally been discovered as a superior tool, which, when controlled by those who understand design, is our greatest force for making objects of artistic merit available to all. It was because we tried to make the machine imitate the hand, in the past, that the horrors of the gay nineties were produced, and a state of general confusion of taste resulted.

This new design awareness that has arrived is making those in charge of quantity production see clearly that in the majority of cases the masses respond to good design—they buy it; in fact, they demand it. Some of the largest companies in America have realized that they have definitely underestimated the taste of their clientele, and that it is necessary to make a clean sweep of redesigning their entire production to keep up their business, or to grow. Popular priced articles of every sort must have an esthetic appeal. Note what has been done recently by the lower priced automobiles, the larger department stores, the large mail order houses, and now the five and ten cent stores. That good design is good business is a fact today.

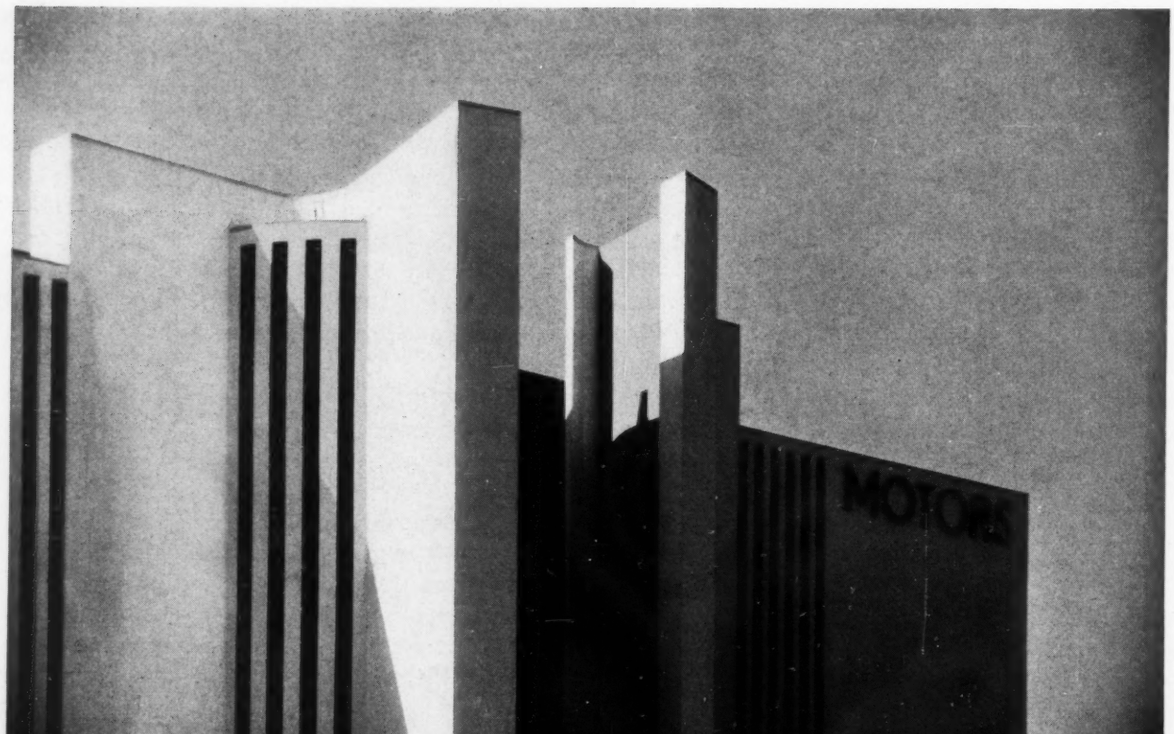
It has frequently been said of late that art is entering the home through the kitchen door. Some of the first articles to really take on qualities of good design were the sink, the stove, the pots and pans, and the wash machine. Because the home is naturally so involved with sentiment it has been difficult to change the long established traditions there. People still cling to the styles of other ages and peoples, and it takes some time to realize that to surround one's self with the furniture and trimmings of Marie Antoinette, the Louis, or even George and Martha Washington, in this day and age is something of an affectation.

The average man and woman are so stimulated by this renaissance in America that they are participating in a great many forms of art activity as was indicated in a previous number. What more wholesome condition can arise? What better expression of an advance in art interest can we expect? What are leaders in industry and education to do? The former seem to be losing no time in putting good design before the public. The educators, always a little conservative and timid, are making some advances, although there is still a crying need for school officials and teachers to advance in understanding the creative process of education and the real significance of art. There is one basic factor in all the arts, and that is design. And talking about art with all the dates and facts, starting with abstract principles without experience as we have so frequently done in the past, is not the best way to carry on art education. No cultured person can deny that one of the most outstanding steps forward in American culture in recent years has been in the matter of art understanding and general understanding of good design. Whether the old-fashioned art lessons have helped in this is a question. Naturally, this is not the first period in history when articles in common use have been made with a feeling for design. Many primitive peoples, as well as the better known races of high artistic reputation, have provided themselves with clothing, tools and utensils of superior quality. But no one can deny that in the recent past, the past two centuries for instance, we have managed to cling to a standard of design which was very low. Now we have a renewed interest in those peoples of the past who have demanded an honesty in the manner in which they fashioned metal, textiles, wood, bone and clay to meet their daily needs with efficiency and dignity. This interest should tend toward assisting us today in learning how to attack our problems, rather than to "life" motifs, styles, etc. In the meantime many arists are leaving their seclusion, they have more respect for the machine, and in many cases they believe that in our present age, whether we like it or not, the machine is here to stay, and the logical place for the artist who is endowed by nature, experienced by contact, and educated in some way, is back of the machine. His must be an understanding and controlling force.

All of this is leading us to question the matter of what are the major arts and what are the minor arts. Obviously the exact significance of their names is becoming somewhat hazy. Is the artist who detaches himself completely from society, painting to express himself, doing as much in the way of helping his fellowman as the one who is facing the problems of using the materials of our day, to meet the everyday need of good design for the masses? We cannot but look with great respect upon the artist, or person of superior insight in design, materials, construction, and human needs, who is willing to give up his personal expression to aid in the developing of an art for the masses. People are questioning the American architect of the old school. Is it he or the engineer who will help most in our new art needs?

In recent years we have grown to have more respect for the taste of the masses. Nor are we as critical with those at the heads of industries, the captains of industry, as far as the quality of their products is concerned. But it is with their hirelings, those persons who are employed by them, to set the standards of the commodities produced. It is what they have done in the recent past that we feel is wrong. In some cases it is the art director himself who has been responsible for producing articles of low design value in large quantity. It is gratifying to those interested in the advancement of American life to see that we now know that good design is demanded by the people. There is a new interpretation of design and of decoration.

Felix Payant



WORLD'S FAIR ARCHITECTURE

In this photograph by Frank J. Roos, Jr., can be seen the new feeling for design ushered in by the Century of Progress Exposition, which definitely established modern industrial design in America.

THE ROOTS OF MODERN DESIGN

By WALTER RENDELL STOREY

It is just a decade since we had to confess that we as a nation had no decorative art, the particular occasion being the declining by the Federal Government of an invitation to take part in the Paris Exposition of Modern and Decorative Arts in 1925. Since then, however, our designers, aided by educators, have made up some of that lack.

What is more significant, I believe, is the discovery that we possessed in 1925 and long before, excellent examples of art adapted to our modern civilization. We all recognize the importance now of the new architecture, exemplified in dwellings by Frank Lloyd Wright, business buildings by Louis Sullivan and engineering structures such as grain elevators and bridges by their contemporaries. Recently, too, the simplicity, usefulness and beauty of pine and maple chairs from Colonial New England have been recognized and appreciated. Shaker handicraft, produced in the Eastern states about a century and a half ago —a comprehensive collection is being shown at the Whitney Museum in New York—has a sincerity and lack of self-consciousness which modern designers might well envy.

Another important gain of the last few years is the breaking of our thralldom to foreign ideas. This means, not that we have taken a narrow nationalistic point of view, but that we have at last realized that our social background, our traditions and our daily mode of life should have their own peculiar interpretations in the arts. We are still far from achieving a free and full expression of our special needs and idiosyncrasies. Yet in the fields where our artistic inhibitions are not so strong, as in the designing of automobiles or metal house wares, or business office equipment, we have far surpassed Europe in usefulness, economy and often beauty.

A decade is not very long in a transitional art period which really began over a century ago, when modern industry and social thought caused a break in the traditions of handcraft which had been flowing more or less consecutively since the stone age cave man used his first tool. During this long period of adjustment, the end of which we are undoubtedly nearing, only the individual handcrafts, not the industrial products, have reached any degree of rounded artistry. Since the day of William Morris handicrafts have been regaining something of their earlier importance, but in the field of machine produced household furnishings and decorative accessories not until recently has there been in this country anything approaching an understanding of the new problems presented. Witness the machine-carved chairs of our grandmothers' day or the tortured brass work of the old-fashioned hanging lamps.

Contemporary with such crude products of the machine may be seen, however, many graciously designed and executed examples of hand weaving, hand blocked textiles, metal work and furniture. This vitality of handicraft, nevertheless, leads the way to beauty in machine-made products.

Today's problems of creating and teaching decorative art are part of a great readjustment of the arts to new conditions of life, especially industrial methods of production. They involve not only making original designs but adapting them to industrial processes. It is not surprising, therefore, that some of the best modern decorative art has come from designers closely associated with the so-called commercial field. They have added to their usual training in art a knowledge of the intricacies of manufacturing and selling. Yet they rightly look upon their occupation of producing new types of chairs, kitchen pots and pans, stream line trains and jewel boxes as serious artistic work, fostering no repressed desires to return to a past in which the designer and craftsman were one.

In this new field of industrial design it is apparent that the successful designers place their emphasis on new conditions—new methods of production, new materials and new uses—rather than on new aesthetic theories. In the past aesthetic theories have always been evolved after the *fait accompli;* this is the first in which they have been consciously used to lead a movement.

To my mind it is putting the cart before the horse

AGE-OLD TENE
NOW APPEAR

Above is an aluminum alloy bowl designed by Lurelle Guild. The simplicity of form enhanced by careful use of ornament, characterizes the discrimination of the modern industrial designer.

The silver coffee set at the left was also designed by Lurelle Guild. The ornament is again restricted to the foot and cover of each piece and is that which rises naturally from the material used and the processes involved.

to try to fit the daily work of an artist into a preconceived aesthetic plan. The realities of his craft offer a better guide. Without belittling the accomplishments of William Morris, the famous English craftsman of the nineteenth century, one can now see the error of his attempt to revive hand work as the major source of decorative art in a world which had harnessed the machine to production and was crying for industrial designers.

William Morris did, however, build better than he ever knew, for his strenuous preaching of the gospel of beauty in everyday things and everyday life fired others to seek the same ends in closer conformity to realities. Morris' campaign for beauty had a great and more enduring effect abroad than at home. Henry van der Velde, the Belgian artist, like Morris designed and built his own house and then made the furnishings himself because he could buy none that were beautiful. Van der Velde later went to Paris and gave concrete form to the Art Noveau style. A wandering soul, he traveled over Germany, where Morris' social-artistic beliefs were already working, and had much to do with their Jugend style.

During the same period Louis Sullivan, the American architect, was facing realities—ability to do this was a trait of the pioneer American, one should note—and adapting his art to the forces of the time. He grasped the needs of city living with its office buildings, the possibilities of structural steel and concrete and in general, a frank employment of materials.

Although the early work of Sullivan and of Frank

The design of modern furniture is such that it emphasizes the function of each piece, makes for better unification in arrangement, brings out the beauties inherent in the materials used, and is simpler in the matter of daily care. These facts are easily discernible in the pieces shown above. Both accessories and furniture designed by Russell Wright.

NEF DESIGN
R EW FORMS

These accessories, executed in copper or chromium, were designed in a manner suited to the machine and quantity production. Their appeal lies not in applied decoration, but in the strength and relationship of basic type-forms. Designed by Russell Wright.

In the teakettle shown above is seen a splendid example of functional design unimpeded by irrelevant ornament. It was designed by Lurelle Guild. The form of the handle and its easy grasp are noteworthy mechanical features.

Although the group shown above is not motivated by any particular antique pieces, it is an adaptation of Provincial types. The construction is quite frankly shown and is utilized as part of the design. The five pieces were made to retail at thirty dollars or less. Furniture and rug were designed by Russell Wright.

Lloyd Wright or their published talks and writings—especially Wright's—were little known or understood in this country at the time, both men were well known to European architects and designers. They were recognized in Europe as demonstrating the rational and artistic use of modern materials such as steel and concrete and the planning of buildings to meet new conditions.

First worked out in architecture, these technical methods evolved an artistry of their own, applicable also to other forms of decorative art such as furnishings and other household accessories. Both Sullivan and Wright, however, in creating novel forms, employed the age-old tenets of designing.

It is well to keep these basic principles in mind, and not to becloud thought by too much attention to forces at best vague and little understood. Some of these are really only names—the style moderne, the international style, functionalism—or imponderable influences, such as the introduction of the motor car and airplane, which help to form a dramatic back drop to our daily lives but which, overemphasized, are likely to confuse any except the experienced designer. The problems of creative design are still the same as those which Michelangelo had to solve when he planned St. Peter's at Rome, or which faced the anonymous builders of cathedrals in medieval France.

An analysis of today's decorative art is most profitable when confined to the best work. Modern decorative design is very uneven in quality, as we all know. This is not a new fault, as a glance at the fur-

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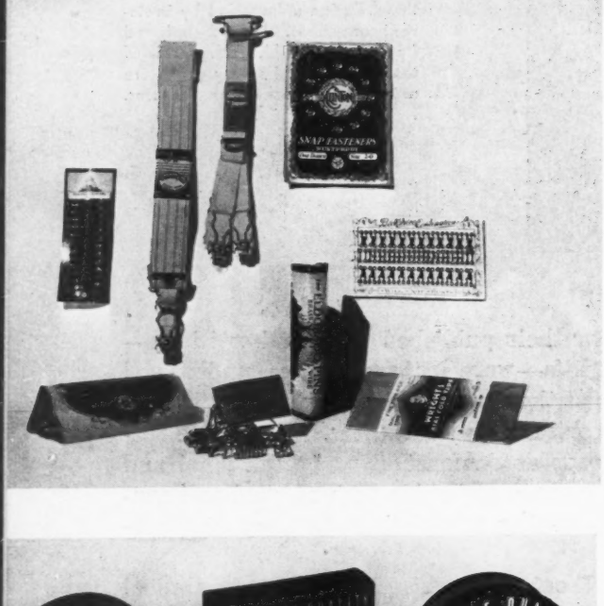

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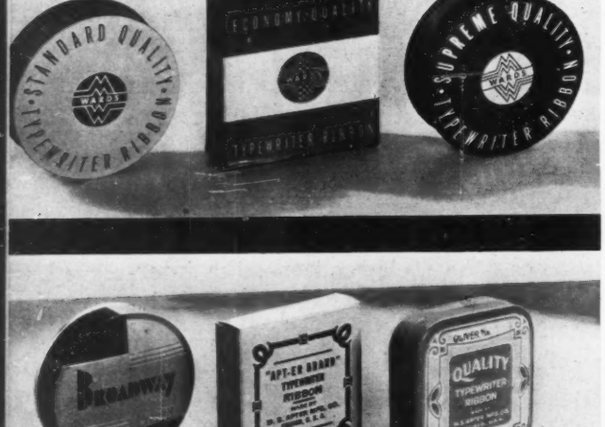

NEW

OLD

niture designs in Chippendale's book for example, "The Gentleman and Cabinet Maker's Director," will attest. He shows about as many unsuccessful designs as good ones.

Let us consider some of the best of the recent chairs, since to design a chair successfully is an excellent test of the merit of a designer or period. In easy chairs we find a distinct trend toward greater comfort. The seat is no longer too close to the floor as was the case with chairs designed a few years ago. Taking a hint from the automobile interior, some seats are given a slight backward slant, which is a definite contribution to comfort. If the seat is correct in size, slant and curve, the need for the all-too-soft and too bulky cushions of the "overstuffed" style is eliminated and better lines permitted.

The arms of the modern chair are often broad and the front ends recessed back from the line of the seat. This latter form is adopted, not to provide greater space for billowy skirts as in the eighteenth century but to make it easy to slip in and out of the chair and to permit the informal but not necessarily ungraceful sitting postures characterisic of our modern manners.

Unobtrusiveness is a quality of many of the latest chairs. The important looking high chair backs of the William and Mary period, the elaborately carved back of the Chippendale and Sheraton styles, and the attention-attracting sinuosities of the Louis XV fashions are replaced today by chair backs whose lines are rectangular or curved and which may be leaned against with comfort. Low backs are also seen, and rounded corners or edges where the form is rectangular, as well as backs in which the curved line is dominant. Almost all the upholstered chairs have very short wooden legs below a deep upholstered seat, thus giving the piece an architectural solidity in subtle harmony with the lines of a room.

In the upholstery of the modern chair is illustrated our present-day emphasis on varied textures. Since there is no carved ornamentation, it is necessary to develop form, color and texture to the utmost in order to gain the distinction which carving used to bestow. Rough surfaced weaves are often used; sometimes a varied effect is accomplished by having the upholstery

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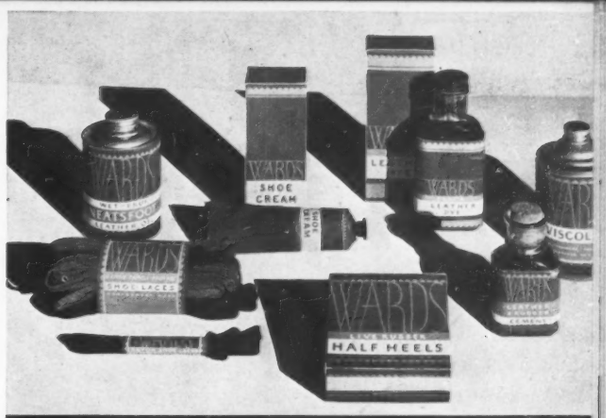
of the seat one color and the back of the chair another. Leather and synthetic lacquered fabrics offer other decorative possibilities. Just now there is a vogue for solid colors. Interesting contrasts are furnished by the color and graining of the wood of the chair or its metal or enamel frame.

The trilogy of design—use, material and technique—is clearly interpreted in some of the recent all-wood furniture. Here a decided trend is apparent toward the directness of early Colonial pine and maple furniture. Not that there are details on which one can put his finger and say that these are from the past. Rather, one sees a marked emphasis on the artistic contrast between broad surfaces—the top and drop leaves of a table, for example—and its narrow, slender rectangular leg supports. The appearance of strength is given by logically placed stretchers on chairs and tables. Economy of space is considered, as in the Colonial secretary with drawers in its lower part and shelves in its upper.

Modern furniture has, however, greater possibilities for varied arrangements than had its Colonial prototypes. Rooms were not usually so consciously decorated then as now. To meet the popular desire to rearrange the furniture in a room occasionally, many pieces, such as book shelves, desks and cabinets are made of similar size and height. Open shelves may be had in units, to mark off divisions in a room or line the back of a couch placed before a fireplace. Small tables in pairs serve as coffee tables, and tables, lamp and magazine repositories for the side of a chair or the end of a sofa. This flexibility in furniture is increasing and is one of the developments created by the need to make a room serve several purposes.

An intresting and democratic field for modern design is household wares and equipment. The exhibition of "Machine Art" at the Modern Museum in New York City last year brought to the attention of designers and the public the artistic progress that had been made in designing the common utensils of the home and industry. The title of the exhibition was inaccurate—"Machine Beauty" would have been a better choice. The machine can not of course produce art, since an æsthetic expression is a self-conscious

See page 38



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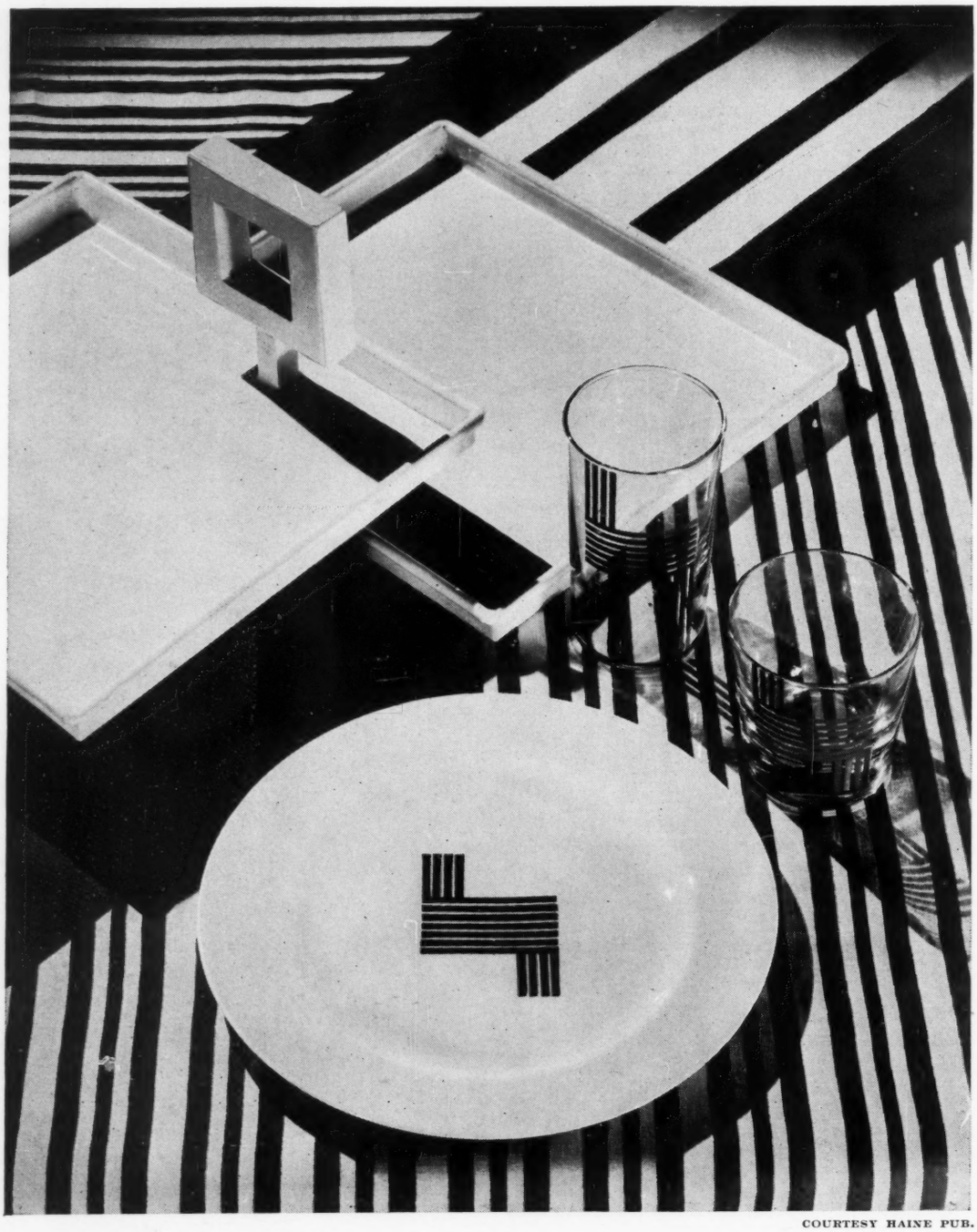
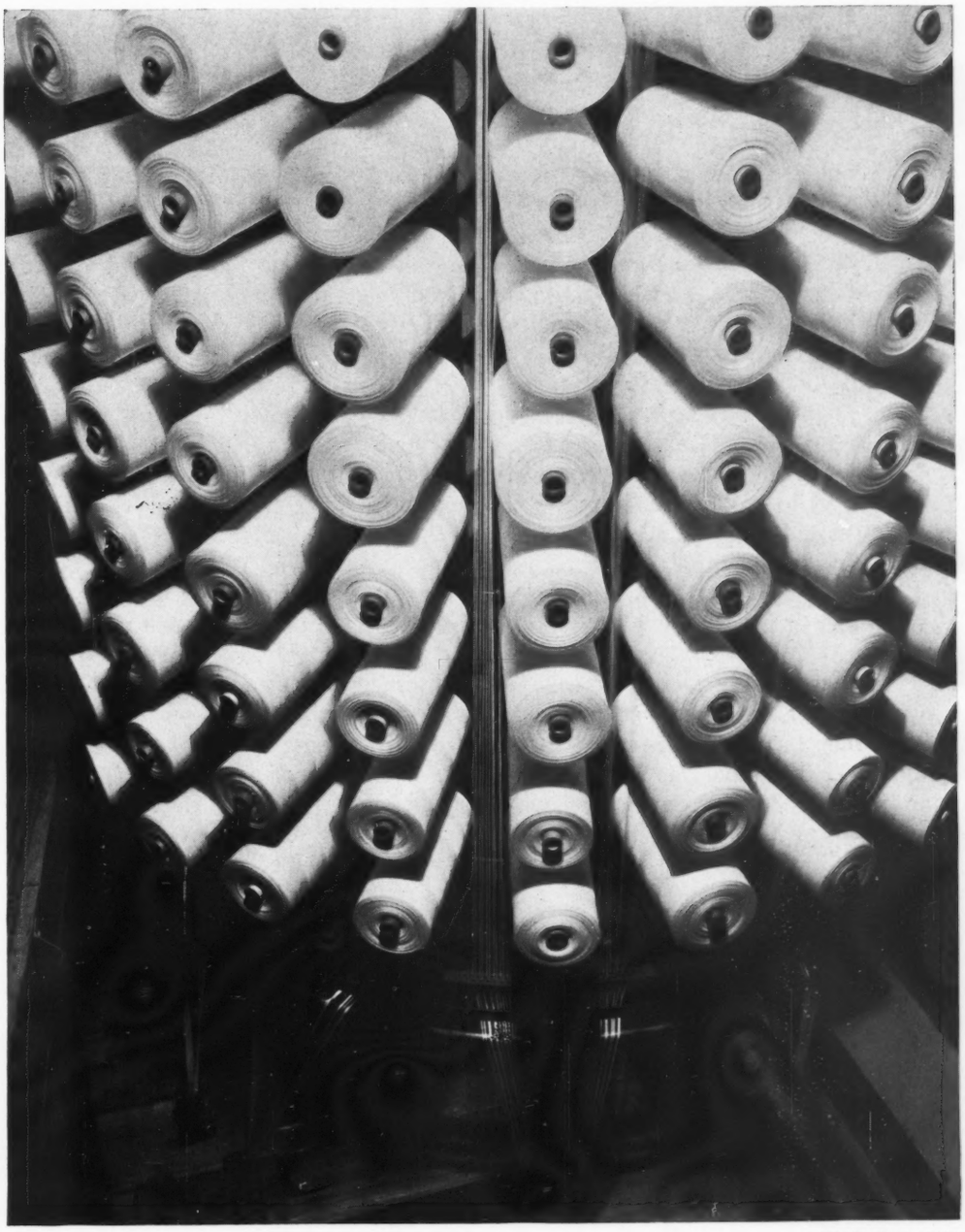


COURTESY HAINE PUB.

ENSEMBLE

Linen tablecloth in red and white stripes, centerpiece painted tole white, design motifs on glasses and plate also in red. These were designed by Margueretta Mergentime, to be used together.



FROM U. S. CAMERA

SPOOLS

PHOTOGRAPHED
BY HARRY OLSEN

DESIGNING FOR APPEARANCE

By HAROLD L. VAN DOREN
REPRINTED WITH PERMISSION
FROM MACHINE DESIGN

In approaching any problem of industrial design the artist-designer seeks out the logic inherent in the product or machine he is treating before he ever touches pencil to paper. What is its *function?* Where and how will it be used? What will its surroundings be? Is there anything he can do to make it any more accessible, any more convenient for the operator? There is no use, he knows, in trying to make a planer or a milling machine look like anything but a planer or a milling machine. But it should look like the best planer or milling machine ever built! It should be the aristocrat of all planers or milling machines.

The engineer says, "But it looks like a milling machine now. And it is by all odds the best machine built today to do its particular job. It's going in a factory anyway, and who will care how it looks? Better leave it alone."

I beg to differ. There are certain isolated mechanical forms—bearings, springs, gears, propellers, etc. —which the artist-designer has no business monkeying with. They are perfect in themselves in that they perform their function admirably and have a mechanical perfection of finish which cannot be excelled. But I have yet to see a machine assembled from many parts which could not be improved in its *unity*. The industrial designer knows ways of leading the eye from place to place, of simplifying and emphasizing, which make it *seem* to fulfill its function to the utmost.

The new art of industrial design will come completely into its own only when the manufacturer and his staff comprehend the inexorable logic behind the artist-designer's procedure. Just so long as the engineer clings to the belief that the industrial designer depends largely upon the caprice of the moment, or upon some curious mumbo-jumbo understood by industrial designers alone, he will naturally resist any outsider's meddling in the complicated problems that arise in the creation of any machine.

Whenever antagonism exists, however, it can usually be traced either to misunderstanding of the way the industrial designer works, or mistrust of his training and background. With the idea of helping to dispel the last vestiges of such antagonism, the editors of *Machine Design* have asked me to set down a few of the principles by which the industrial designer works.

These principles are the alphabet of the designer. They are his five-finger exercises. And they apply in some form to all the other arts: music, poetry, architecture, sculpture, the dance.

I do not wish to cajole anyone into the belief that he can read these articles and thereupon produce a sound and well-integrated piece of design. But I sincerely believe that the application of some of these fundamentals to any design-for-appearance problem will minimize the chances of clumsy and inartistic results. For example, the engineer who, in drawing the housing for a machine, will try to approach the problem with some of these principles in mind, cannot help but find them of benefit when confronted by some of the vexing problems that invariably arise. And the manufacturer who feels that the time is not ripe for the expense of consulting design service, and who yet feels that his product needs more "eye appeal," may find here some clue which will be, if nothing more, a temporary helping hand out of his difficulties.

If these principles seem in themselves rather like ABC, the reader is hereby warned that their proper application is not so easy. So many barriers may be raised by the "orneryness" of the machine itself, or the difficulties of its manufacture, that one sometimes gives up in despair and violates all the rules, or else loses sight of them completely in the devious byways into which the actual application leads. The successful design is that which has retained the maximum of "visual rightness" with the minimum sacrifice of efficiency and production practicability.

The principles I refer to are few in number, but large in import: Rhythm, Proportion, Balance, Unity. They will not be discussed in that exact order, nor always separately. Balance is a strong factor in obtaining Proportion; Unity presupposes the correct interrelation of the other three. We will start, rather, with simple elements, gradually progressing to more complex problems.

Let us begin with the simplest form of notation we can make, a single dot. Here it is:

●

You will admit that I have chosen the most impersonal form possible. As design it means nothing; it is merely an isolated phenomenon, made with the point of a pen or pencil, having no artistic significance. It is, so to speak, a graphic representation of the geometrician's "point in space." Before this tiny dot can have artistic significance it must be placed in juxtaposition with other dots, lines or marks. Once

this has been done, we begin to have the materials for design.

Very well, let us take two dots, thus:

Still pretty slim pickings. If they remain close enough together they have possibilities. (Set them apart and they are naught). But still something is lacking. The eye moves from one to the other, rests nowhere. Something is needed to tie them together. Happy thought: We will add another dot, so:

Now, gentlemen, we have something! We have made real progress. Believe it or not, we have the necessary tools for design. These three dots are far more fundamental than you may think. For one thing, we have acquired balance. The eye can rest more easily on three objects, even if they are all alike, than it can on two. It seeks out the dot in the center, and rests gratefully there, allowing its two companions to take a secondary place in our attention. It could be given vastly increased interest by changing the position of the dots, or by altering the size of some of them. But we are getting ahead of ourselves. For the time being let us deal with dots of equal size placed in a row. We will skip four dots, because we would be no better off than with two. The eye would wander aimlessly among them, never come to rest, and soon move on to more interesting visual phenomena. Let us try five:

Here again is an interesting arrangement. The central dot becomes the center of attention, flanked by a balanced number on either side. But—danger signal! We are running full steam ahead into one of the worst pitfalls, *monotony*. We cannot go much further and still have good material for design. Six dots would be worse than four, seven is practically the limit for sustaining interest, and even then should not be attempted except by an experienced designer in conjunction with other elements which he knows to be of interest. More than seven could not possibly be recognized by the human eye as a balanced unit, for you would have to stop and count to determine whether it contained an odd or an even number. We are back where we started, with one or with two. Nothing to hold the attention. Monotony.

Very well, let us deliberately set down a monotonous number, a number that cannot instantly be counted by the human eye, say nine. Let us see what we can do with them:

Nine identical dots in a row: Raw material. A single drum-beat would mean nothing; it would be the audible equivalent of one dot, just an isolated phenomenon. But an evenly spaced succession of drum-beats, the steady, monotonous throb of the tom-tom, contains the raw material of Rhythm. It is unorganized, unassimilated. It needs conscious manipulation to give it interest, pattern. Fortunately, a sense of rhythm is common to almost every human being. It is the lowest common denominator of music. Whoever responds to the simple rhythms of music can develop a feeling for the simple rhythms of design.

But to return to our dots. A series of dots prolonged beyond the capacitly of the eye to count at a glance is obviously monotonous. It is the ticking of a clock, the steady dripping of water from the tap into the sink. It is so monotonous that it soon fails to hold our attention and we do not even notice it—unless it happens to "get on our nerves." The human mind rejects monotony, craves variety. The simplest way to obtain variety, still using the same dots for elements, would be to arrange them in groups with spaces between:

The spaces, or "rests" as they would be in music, give us our first real sense of rhythmic arrangement. We have broken the monotonous spell cast by repetition, and obtained the beginning of pattern. Other groupings can be made, further increasing the interest, such as:

But to return for a moment to the original nine dots. In what other ways can we vary them? By changing their *size* and their *position*. Spacing them evenly, as at first we can enlarge every other one, thus:

By so doing we have given *accent* to the monotonous succession with which we began. It is the rhythm of a military march—ONE, two, THREE, four. A better arrangement, pictorially, would be the equivalent of the waltz, with an extra beat at the beginning and with part of the last bar amputated:

Our waltz is far more interesting than the march, because the three large dots make for better balance than four. You can get the feel of these rhythms by beating them out on a drum, or with your knuckles on the arm of your chair, using a light tap for the small dots and a heavier one for the large dots, and prove to yourself that rests and accents are more exciting than monotony.

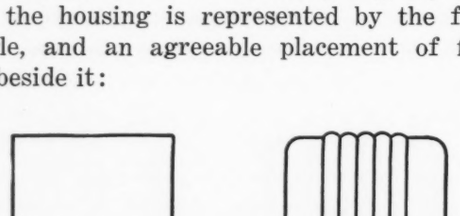
But let us get back to our dots. In accenting them with larger dots we have still preserved the even spacing of the first row. Now if we will combine accents with spaces, or "rests," we can produce a whole new series of effects, much more varied than either method taken separately can produce. Here are a few examples:

Yet this is only the beginning of the possibilities inherent in a simple graphic form. Up to now we have confined ourselves entirely to dots arranged in a row, and have used only one weight of accent. If we were to spread out in other directions, introduce other accents, and group the spots in areas, we could soon fill many pages, for the combinations are inexhaustable. This might be instructive if we were to study pattern as applied, let us say, to textile design. But it is not often that we have occasion, in industrial design, to apply a pattern all over a two-dimensional area.

The "Saga of the Dots" illustrates a number of fundamentals. We chose this simple shape because it is easily grasped and conserves valuable illustrative space. We have let the dot stand as a *symbol* for any line or shape or form with which we may be called upon to deal. It might for instance represent the bosses on the casting drill press head, the slats on a sled, the decorative ribbing on a radio, the dial opening on an instrument board, any problem where you have a repetition of like or similar shapes. Avoid monotonous repetition. If possible, combine the middle two out of four, thereby giving variety and accent to the design. Utilize spacing, or "rests" to concentrate attention, and create rhythm.

Perhaps an illustration is in order. Let us say we have the housing or shell of some product before us—a check register, an automobile heater, a computing machine. It is a box-like stamping, and needs relief. We decide to embellish it with ribs.

Now ribs have been overdone in modern design, but they are are simple to machine in the die, and die cost is usually a factor. They are easy to buff and polish. They are dignified, and, if in a contrasting finish, may add snap and distinction. Since we are not hampered here by necessity, we will choose an odd number of ribs, for reasons stated in the foregoing, say five. The end of the housing is represented by the following rectangle, and an agreeable placement of five ribs shown beside it:



The number of rib shapes you can use is endless. They may not be ribs at all, but flutes. Or they may take on the form of serrations, or flattened triangles. You may wish to combine different forms, or accent them in different ways, or vary their width.

The thing you must guard against is using them *at all* if they are not necessary. Perhaps the cover should really be plain. If, and only if, the ribs cannot be subtracted without injury, they should remain; they have then ceased to be mere embellishment and have become a necessary element in the design. Strive always for simplicity, for therein lies the greatest beauty. "When in doubt, leave it out" would be a good rule to follow.

So far we have dealt with small units, dots, which we have used as symbols for other shapes and forms.

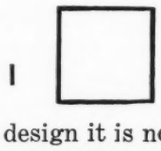
It is time we attempted the more advanced subject of space division. In industrial design we are dealing with objects in three dimensions in the "round." A washing machine, a furnace, a vacuum cleaner will be looked at from every conceivable angle, and never from the identical spot twice.

But before we can discuss the complicated problems of design in three dimensions, we must understand some of the principles involved in the pleasing division of two-dimensional spaces. It involves the questions of Balance, Proportion, Unity. Rhythm also, for there can be rhythm in areas as well as in lines.

What do we mean when we say that a human body, a skyscraper, a dining room table, is well-proportioned? Simply that every member is in harmonious relationship with every other member. If legs are too short in comparison with trunk, we instinctively note the variation from the ideal figure. If the top of a table is a pleasing rectangle, and the supporting members are neither too thin nor too ponderous, it is good in proportion.

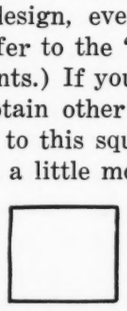
But what is a pleasing rectangle? Fortunately there are mechanical aids to help us. They are of value insofar as they help to train the eye, and also as a check on our work as we go along. For in the last analysis the eye, properly trained, is the court of last resort in all matters of design.

First let us consider a simple square, on which we are going to base the rectangle. Here it is:



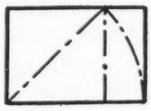
As a basis for a design it is not among the most useful. It has an air of finality, but it is static. It does not invite the eye to roam. It does not suggest movement, which every design, even that of a furnace, should have. (We refer to the "movement" of its interrelated form elements.) If you subdivide the square symmetrically you obtain other static shapes.

Let us add slightly to this square, in one direction, so that its breadth is a little more than its height:

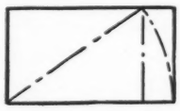


Technically this is a rectangle. But it is *not* a pleasing one. Why? Because it is neither fish nor fowl—too close to a square to give the feeling of finality communicated by the shape, not enough of a rectangle

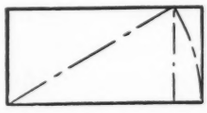
to subdivide interestingly. No rectangle will be really interesting as an abstract shape until its width equals at least the diagonal of the square on which it is based, as:

2 

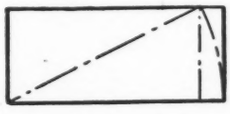
Another pleasing rectangular shape can be produced in similar fashion from this, letting the width of the new rectangle equal the diagonal of the preceeding one:

3 

When this procedure is carried one step further, taking the diagonal of rectangle No. 3 for width, we have a shape composed of two contiguous squares of the size with which we started. You will have to take my word for it that this shape is not inherently as good as either No. 2 or No. 3. It could be shown, but the demonstration would involve too many steps. It does not subdivide as readily as the others:

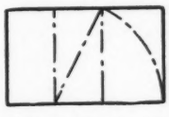
4 

But still anther step, based as before on the last rectangle, No. 4, produces a longish shape which is again replete with possibilities.

5 

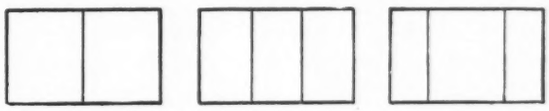
You will notice in this series developed from a square by successive diagonals, (counting the square as No. 1), that the two shapes which offer the best possibilities for interesting subdivision are Nos. 3 and 5. (Again that rule of three and five.) Note also that step No. 4 produced a rectangle composed of two identical squares, and is not a particularly pleasing shape, an exact analogy to the two dots (or four) discussed in the foregoing.

Perhaps the most completely satisfying of all rectangular shapes is the famous "Golden Rectangle" of Leonardo da Vinci. It can be produced by bisecting the square, drawing the diagonal of half the square, and producing this along the bottom line as before:



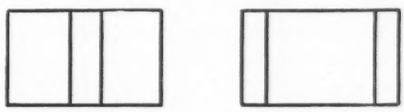
If the main enclosing shape of a piece of industrial design could be fitted into this shape, and the subdivisions within the shape agreeably made, our problem, at least in its two-dimensional aspect, would be quickly solved. This remarkable shape is susceptible to artistic subdivision in almost unlimited ways. Those who wish to explore its possibilities would do well to secure Jay Hambidge's *Elements of Dynamic Symmetry,* where they will find the vast ramifications of this and other simple geometric forms thoroughly analyzed and developed.

But we must forego such advanced speculations and confine ourselves to simple diagrams which can be used as rules of thumb. Let us take one of the shapes we have developed, the so-called "Golden Rectangle." We know better than to divide it (No. 1, in the next illustration) into two parts. (Remember the dots.) Three equal parts is better (No. 2) but, as with the three equally spaced dots, it leaves much to be desired. It is better, of course, to make shapes alike than *almost* alike. But it is still better to make them distinctly *un*like. Therefore we will widen the central portion considerably so that the two resulting end areas are quite different from the center area (No. 3):



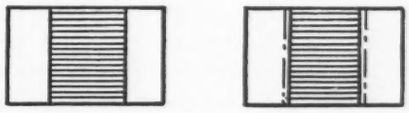
1 2 3

The exact location of the lines necessary to divide the rectangle into the most agreeable proportions could be demonstrated with instruments, but it is time that we cultivate the habit of letting the eye dictate the best balance of the elements. We would not, for instance, divide it in either of the following ways, that is, if the entire rectangle were of the same tone value (i e., all gray, or all tan, etc.):

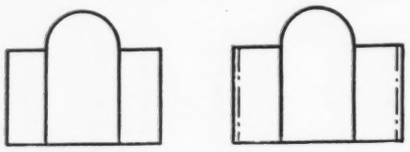


4 5

No. 3 of the last series is surely superior to any of the others if we are trying to obtain formal balance and agreeable proportion. (The question of informal balance, which will be touched upon later, is not as frequent a problem in industrial work). But, although No. 3 might be perfect if we were dealing only with areas of the same tone value, we might want the central portion darker. In this case the central area might overbalance the lighter flanking wings (left, below) and we might have to make an adjustment, by narrowing it, to secure the correct visual balance (right, below):



The same might be true if we modified the whole shape by adding more *area* to the central portion (left, below). This might demand a slight enlargement of the wings to compensate (right, below):



The texture of the finish might also have a bearing on our decision about the exact proportions which would be best for the center area. If the wings were bright chrome and the center Butler finish, the bright metal would be overpowering, and more space should be given to the satin finish. These are refinements which take judgment and experience to manipulate. But as the eye gradually becomes trained, they seem to follow a certain inexorable visual logic.

These are merely a few of the simple ways in which we might find it possible to manipulate a plain rectangular shape. I have not attempted to apply them to any specific problem, and shall not until later. But I hope that I have suggested a method of approach appealing to anyone whose mind is cast in a logical mold.

Industrial design, as opposed to textile design, arrangement of component parts of an advertisement, etc., is almost always a matter of three dimensions. If the fundamental masses of a design are harmonious, the decoration of flat surfaces may enter into the picture as a minor consideration. But mass is all-important. Some fundamentals of rhythm, proportion and space division in the flat have already been discussed. Now we shall deal chiefly with the manipulation of masses in three dimensions.

The principles involved are analogous, but their application to three-dimensional forms is a much more ticklish question and one which requires a different kind of mental visualization. It is unfortunate that the majority of engineers do not practice constantly the free-hand drawing they are taught in the schools. They have accustomed themselves to thinking orthographically and have lost the faculty of visualizing in perspective, and of translating their ideas into free-hand, shaded sketches.

PERSPECTIVE SKETCHES ARE VALUABLE

Facility in free-hand perspective sketching is virtually indispensable to the designer. A well-planned isometric is sometimes a help, but it cannot replace perspective. The plan, elevation and side views of an object may each be perfect in itself, and yet the entire design may completely lack Unity.

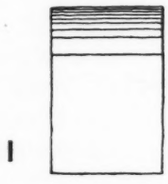
For example, let us take a diagram used in the preceding section. We showed a rectangular shape known as the "Golden Rectangle" of Leonardo da Vinci. It was produced by bisecting a square, drawing the diagonal of half the square, and producing this diagonal along the bottom line.

We then divided it into agreeable spaces ,and added to the central section a semicircular piece. We felt that this addition called for a slight expansion of the "wings" on either side.

As an example of balanced design in two dimensions, it is unimpeachable. It will be found in one modification or another throughout the history of architecture: in triumphal arches from Roman times, in window groups from the Renaissance, in formal interiors. Paintings, usually altar pieces, executed in this general shape are known as "triptychs," and may be found repeated thousands of times in the religious art of Italy, France, Germany and Flanders. The central area makes an ideal frame for a standing figure of the Virgin, the customary groups of saints being depicted in wings.

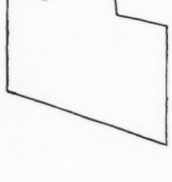
The arrangement derives its dignity and impressiveness from the fact that it has "formal balance"—a central dominating or accented shape, flanked by minor shapes of different proportions. No one of these shapes alone would be of particular interest, but together they have all the elements of good design—Rhythm, Balance, Variety, Unity.

Now we will turn this at right angles and draw the side view, letting the total area make another good rectangle as shown herewith. Since both elevation and side view are based on beautifully proportioned rectangles, the resulting design should vie with the Parthenon in the perfection of its proportions.



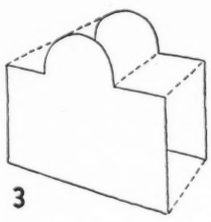
1

Let us now swing this flat shape into perspective, as if it still had but two dimensions, its thickness still being theoretical, or, if you will, the thickness of a sheet of paper:

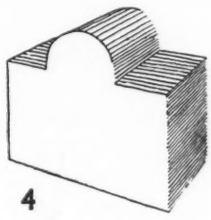


2

Now we shall push the entire shape back into space at 90 degrees, until its side has assumed the proportions called for by the side view. Then we shall shade it:



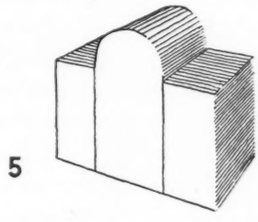
3



4

The result is somehow disappointing. For one thing it is pretty bare, proving that a shape which may be interesting in the flat may not be particularly effective when projected into deep space. Now that our design is shown as a solid, the problem has assumed a different aspect.

Another reason is that the vertical lines, which satisfactorily divided the original flat shape into three varied areas, are no longer of any use to us when we throw it into *mass* seen in perspective. We have eliminated them purposely, because, now that we are dealing with three-dimensional form, we must get rid of all purely two-dimensional aspects and think in terms of solids. At best, these lines could only be included in the design as ribs, or beads, or painted stripes, and they would count for very little. See for yourself:



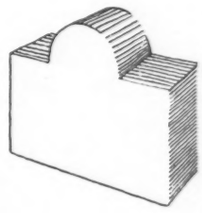
5

Further, we discover that our "Golden Rectangle," which we know to be a beautifully proportioned rectangular area, has completely disappeared in the perspective view, and at the end of the wing we now have an area which is almost a square, but not quite; and, if we have learned our lesson from the preceding section, an "almost" square shape is to be shunned as the plague. In fact, it was quite useless for us to attempt to make the side view, No. 1, another Golden Rectangle because the draftsman's "side-view" of any design is a purely arbitrary conception. Visually it is non-existent, although it is a very convenient way of working on the drawing board.

SHOULD VISUALIZE DESIGN

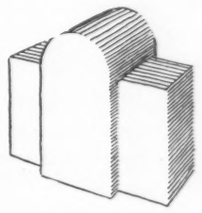
Very few people have sufficient powers of visualization to "see" even a fairly simple design in the mind's eye when confronted with the usual elevation, side-view, and plan. That is why the architect shows the home-builder a perspective sketch, and why the industrial designer shows his client a perspective rendering or a model. Of course if the only function of the designer were to make perspectives of already existing designs, it would be folly to engage him, for anybody can "bone up" on perspective from a book. The designer must be able also to manipulate shapes, to think in terms of forms seen in mass rather than in line.

But to return to our design. We have been worried about its bareness as it appears in No. 4, and about the "almost square" shape at the end of the wing. We might resort to the device of changing the square to a more agreeable rectangle. Let us try the "golden" once more:



6

Perhaps we have improved matters somewhat. We have been forced to narrow up the whole design, but there is nothing actually wrong with the result. It is narrower, that's all. The real trouble is, we are still thinking in the wrong way. We are modifying small parts of the design, a side at a time, without regard for the whole. We shall have to take the bit in our teeth and let that dominant central motive *really* dominate the whole design, but do so in three dimensions as well as in the flat. We can do this by returning to No. 4, and pinching in the flanking wings, thus:

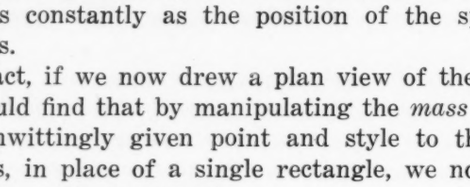


7

Now, gentlemen, we have begun to visualize in three dimension for the first time! Hitherto we have taken only hesitant steps. But now we are manipulating masses rather than lines—the all-important step. By this change we have accomplished several objectives.

We have broken up the flat mass of the front so that it ceases to look quite so bare. We have increased the dominance of the central mass, thus giving accent and rhythm to the form. Automatically, we have forced that squarish shape on the end to become a more positive rectangle, without changing the depth of the central mass originally established in No. 4. We have broken the straight base line, and have produced a varied line possessing far more interest, one which changes constantly as the position of the spectator changes.

In fact, if we now drew a plan view of the object, we would find that by manipulating the *mass* we had also unwittingly given point and style to the *plan*. That is, in place of a single rectangle, we now have two intersecting rectangles:



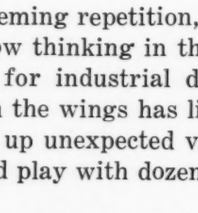
8 9

You will note also that the masses have been manipulated so that, in effect, we have a central vertical mass of distinctive shape actually penetrated by another mass utterly different in shape, consisting of a rectangular prism, the end of which we can make a Golden Rectangle if we so desire:

10

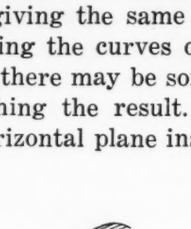
At the risk of seeming repetition, let me again point out that we are now thinking in three dimensions, an absolute requisite for industrial design. The simple step of pinching in the wings has liberated our imagination and opened up unexpected vistas. Now we can let ourselves go and play with dozens of different ideas that occur to us.

For one thing, we notice that the horizontal mass is rather harsh and uncompromising compared with the gentler vertical mass which it penetrates to form the wings. We might round it off in the vertical plane, as follows:



11

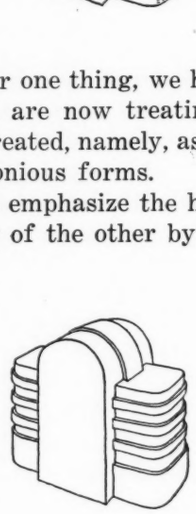
This is not entirely satisfactory, however, for it only succeeds in giving the same vertical feel to the wings, and repeating the curves of the central mass. It is all right, but there may be some other and better way of accomplishing the result. Let us round the mass off in the horizontal plane instead:



12

Much better. For one thing, we have more contrast, more variety. We are now treating the two masses as they should be treated, namely, as well-differentiated but entirely harmonious forms.

We may wish to emphasize the horizontality of one and the verticality of the other by further embellishment:



13

We could go on indefinitely altering and refining these forms, but this brief demonstration should be sufficient to point the way. Intentionally I have chosen an abstract shape, without reference to what sort of product it might be. In actual practice we would probably have much less freedom than this, due to dozens of limiting factors. But it is sometimes astonishing how the ingenious designer will find ways and means of manipulating the form elements of a given machine or part even under difficult limitations.

At that, if we use a little imagination, it would not be hard to supply in the mind's eye a dial and hands, and think of our design as a mantle clock. Or it might be the housing of an oil conversion burner for furnaces, or a molded plastic box containing a manicure set for the dressing table.

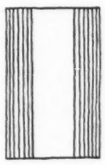
CO-OPERATION IS NECESSARY

The old saw that you cannot make a silk purse out of a sow's ear goes for industrial design as well as many other things. Occasionally a manufacturer expects the designer to recreate a machine or product, then takes a fiendish delight in pointing out that nothing must be changed. Of course such obstacles are insurmountable. Radical redesign requires wholehearted

co-operation on the part of plant executives, engineers and designers. Real results cannot be obtained in any other way. New tools and dies, jigs and fixtures cost money. True, but many times the investment has proved worth while, a thousand fold.

Before closing it may be well to discuss briefly another matter. It can be demonstrated in two dimensions as well as in three. Every designer uses lines, forms and other elements purposefully, to accomplish certain preconceived ends. He knows how to make the spectator's eye do his bidding. He does not always have a free hand to mould the material with which he is working into the most pleasing shapes. More often than not the raw material is awkward and difficult. A given rectangle may be too long to be a pleasing or easily divided rectangular shape, and yet not long enough to become a mere *band*. On the other hand, it may approach too closely to a square to be agreeable, as previously discussed.

If such is the case, the designer has at his command certain resources to trick the eye into seeing a shape as a form which it is not. One of these resources may be demonstrated, in the manner of the "optical illusions" in Sunday supplements, by dividing two identical rectangles with lines in opposite directions, this making them appear totally different shapes:



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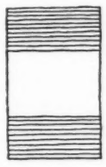

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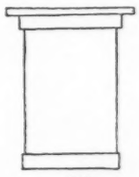
There are many optical illusions which the designer may legitimately use when the conditions are such that the main masses cannot be given the ideal proportions.

The Greeks were masters of the art of visual deception. A Greek temple that may appear quite formal and regular will embody dozens of subtly refined irregularities. Its rectangular plan is not rectangular at all, but each side is slightly bowed out to counteract the tendency toward concavity that ensues from geometrical regularity seen in perspective. Each column is swelled a little about two-fifths of the height to avoid the "knock-kneed" effect produced by the two almost parallel lines of its sides. This device is known as "entasis." Many modern attempts to imitate the classic style exaggerate the entasis, making the column look actually swelled, whereas in the best Greek examples the swelling is so subtly done that the columns appear evenly tapered—the effect intended.

MATERIAL MAY LIMIT DESIGN STEPS

In attempting to apply such refinements to design, we are often checkmated by the material or the process. Entasis is practically impossible in working with sheet-metal formed on brakes, and is difficult and costly in stampings. It is more possible in casting or molding processes.

Modifications of the principle to achieve similar worthwhile effects can frequently be used, however. The position the spectator will assume in viewing the object is important. Let us suppose we are designing a cast-iron pedestal to support some machine, say a lathe, or, better, a saw with a flat working-table, waist high. If its sides are parallel, the bottom of the pedestal may look smaller due to the diminishing perspective of the lines as seen from the height of the eye in standing position. If we tip the lines in very slightly at the top, we can help to overcome this diminishing effect.



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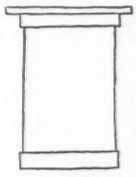

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On the other hand, the effect of convergence in the parallel sides of a gasoline pump, where the height is greater than eye level when standing or when sitting in a car, would not be so noticeable, hence the lines might as well be left parallel.

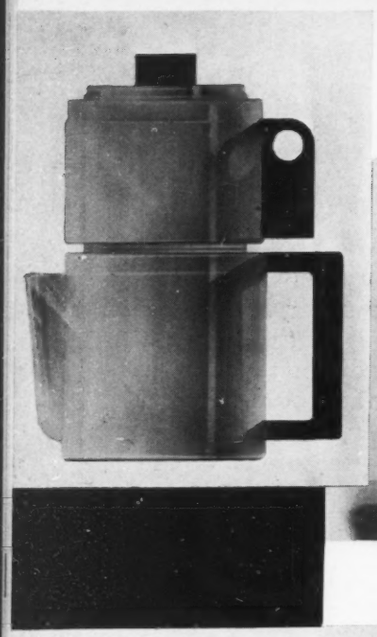
Even the simplest problem demands careful consideration of many points which may seem like splitting hairs, but which actually spell the difference between success and failure in the final appearance of the product when it is ready for the market.

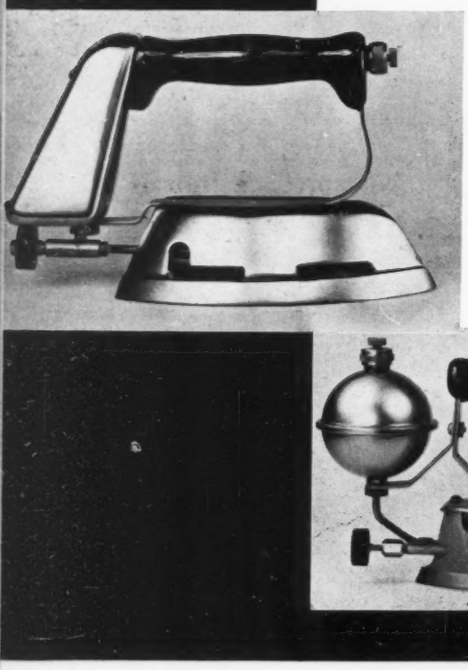
No amount of training in the pure theory of design will make one a good designer if he lacks genuine sympathy with the practical problems of shop practice and production economy. And by the same token, no matter how sound his knowledge of engineering principles may be, he will be completely helpless when faced with a design-for-appearance problem without some understanding of the principles involved in that special field.

We have dealt largely with theory, using abstract diagrams to illustrate some of the fundamentals of Rhythm, Proportion, Balance and Unity. It is time we chose some actual problems and tried to apply these principles in a practical manner.

Let us suppose that we have just begun work with a manufacturer of domestic gas heating equipment. This gentleman would like to improve the appearance of a line of gas furnaces. He manufactures several types: gravity, forced air, etc., each in several price ranges, but the large volume is in the lowest price line, highly competitive.

We foresee at once that cost is going to be a big factor. A few dollars added to the cost will be multiplied several times in the price to the consumer. But design economies have already been effected by more





efficient methods of drilling the ports in the burners and assembling the baffles. Therefore, rather than lower the price, which is already in line with competition, the manufacturer decides to spend a little additional on appearance.

A visit to the showroom is frankly discouraging. We are the plastic surgeons, and here are our patients. Our job is to touch up their noses, straighten their teeth and remove the freckles. The manufacturer knows his units are not much for looks, but they are his babies, and he has a justifiable pride in his offspring.

WE START WITH AN UGLY DUCKLING INTERIOR APPEARANCE NEGLECTED

The low-priced furnace, our first face-lifting job, is a particularly ugly duckling. Like most equipment of its kind, designed for the huge low-price house-heating market, it consists of a fat cylinder of galvanized sheet metal, surmounted by a bonnet of the same material in the form of a truncated cone, from which, like the tentacles of an octopus, radiate the ducts. Close to the floor is a cast-iron plate, on which are arranged various controls: A motor-control unit, automatic pilot, regulator, valve, manifold, etc. For slightly higher-priced models, there will be a humidifier pan.

We observe that the cylinder is made up of two long sheets wrapped horizontally and drawn together at the back by bolts, over a T-shaped ring. An opening is cut in the lower sheet for insertion of the control mountings. The furnace is shipped KD, with these

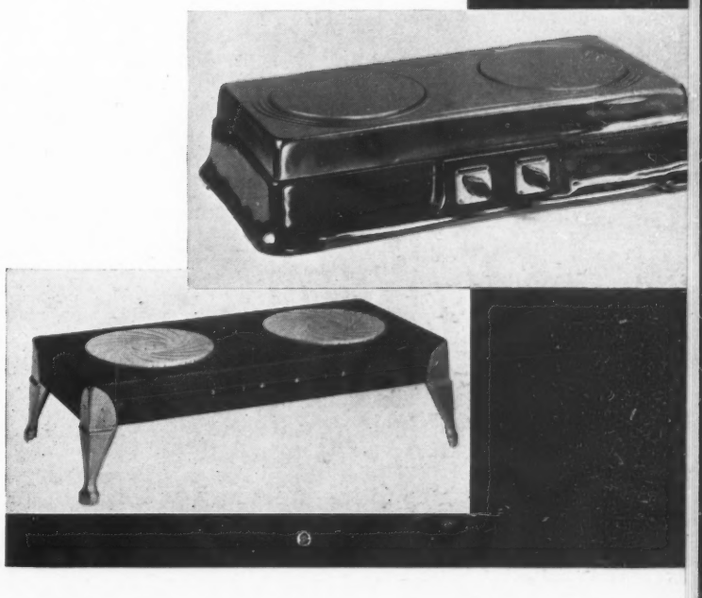
Intelligent understanding of materials and the [illegible] shown are in increasing evidence in kitchen utensils. The [illegible] both in price now planned are suited to mass production through [illegible]ey conform ter understanding of the capabilities and limitations [illegible]mpler to machine. It is noteworthy that decoration has almo[illegible] to the m pletely disappeared in favor of functional forms. [illegible] steadily i

ART ENTERS THE HO[illegible]HR[illegible]

sheets rolled tightly together. This precludes prefinishing the sheets, for by the time they were installed by the erection man, they would be marred and scratched out of all recognition. The bonnet (the truncated cone mentioned in the foregoing) is shipped blank, and the holes cut on the job by the erection man to fit the ducts, depending on the requirements of the particular house.

We are faced, therefore, with a startling array of "don'ts." We can't paint the sheet metal. There is no use trying to make the cylinder into an oval (foolish on the face of it), or square (that's another class of furnace made by the same company, requiring an angle-iron frame) or hexagonal (expensive to form the metal). The bonnet can't be a stamping (enormous dies, and the holes have to be cut on the job anyway). Apparently anything we try to do to the main body of the furnace would cost so much that it would be put immediately into a higher price bracket, competing with another unit in the line.

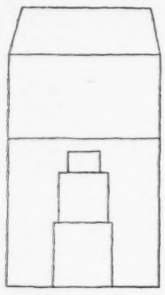
So we are left with the control panel. We suggest that it be housed in completely, by means of a form, or series of forms, which would cover the miscellaneous assemblage of smaller shapes and give a certain unity to the whole furnace. This suggestion meets with some interest, so we gather all available data and set to work. Fortunately the whole furnace is undergoing a complete mechanical overhauling, so the management is not averse to regrouping the controls. We set about to determine the clearance necessary to house all the controls.



as shown here are extremely inexpensive, outclass- both in price and appearance the more ornate products, ey conform to the requirements of the machine and impler to manufacture. Though this change has been to the manufacturer, he has been more than repaid steadily increasing response on the part of consumers.

HROUGH THE KITCHEN

The result is as follows:



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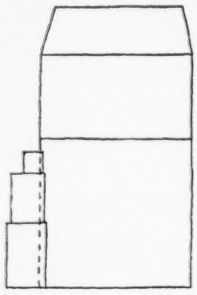
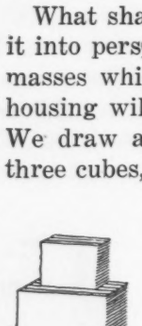


2

In other words we have three roughly cubical shapes superimposed one upon the other, starting at the floor, and extending more than half the height of the cylindrical body of the furnace. The bottom cube takes care of the manifold and regulator. Immediately above the regulator is the valve, and extending upward into the second cube is the motor control with its dome-like housing. The third cube encloses the neck of the humidifier pan.

What shall we do with it? The first thing is to get it into perspective. Remember that we are dealing in masses which we must manipulate so that the entire housing will have a unified and coherent appearance. We draw an accurate mechanical perspective of the three cubes, as at the left.

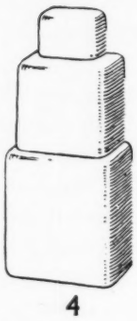


3

Unfortunately, none of these cubical shapes offer any pleasing possibilities in themselves. They are a miscellaneous lot, ill assorted, and thoroughly uninteresting. They are little better than a heap of building blocks as left on the floor by little Willie before his afternoon nap. If we try to apply any of the rectangles which we constructed in the first part of this article to the front or sides of these cubes, we will be sadly disappointed. And we know that we cannot distort these shapes, because we are trying to enclose the controls inside as economically as possible. We should avoid, whenever possible, housing just "air."

There are other limitations. We must have a door eleven inches wide on the front so that the controls can be removed without removing the entire housing. And the top cube must be independent of the rest so that the householder can remove it easily to fill the humidifier pan.

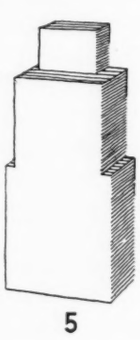
Our first step in the procedure would be to place the perspective outline shown in *Fig. 3* under a sheet of tracing paper and try various sketches over it. We must be careful, however, not to forget the shape and general character of the whole furnace while working on this component part. The furnace itself is an assembly of circular, cylindrical or conical shapes. Therefore it would be out of keeping to design the control housing so that it was composed principally of angular shapes. We might begin by rounding off the cubes themselves in an attempt to make one melt into the other, thereby mitigating their angularity, *Fig. 4*.



4

Not so good. They are still so many boxes, one set on top of the other. Furthermore, we would have a high time trying to fit a door to those two lower cubes. They need some further manipulation. What shall it be? Well, for one thing, we observe that the middle cube is only about an inch shallower than the bottom one, front to back. Surely we can take the liberty of allowing a little extra clearance for the motor control unit, *Fig. 5*.

Distinctly better, you will admit. We have at least blended the two lower cubes, so that they become one shape. But it is not particularly pleasing. Further treatment is necessary. Why not make that central vertical form into a dominant motive by pushing back the sides of the lower cube? We consult our prints and find that there is no interference at this point, so the shape below is developed, *Fig. 6*.



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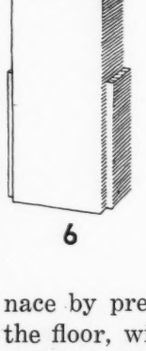
We have overcome one very definite objection, namely, we have provided space for the necessary tall door for servicing the mechanism. But the relative heights of the "wings" and the main body are not good—the wings cut it about in half. Again we take liberties for the sake of appearance and raise them to roughly two-fifths of the height of the vertical shaft. Then we introduce radii, cut some ventilating louvres in the door, add handles to the door and to the removable humidifier-neck cover on top, apply an instruction placque and some decorative ribs, and make up an actual size wood model, painted with the colors we have chosen. *Fig. 7* is the result.



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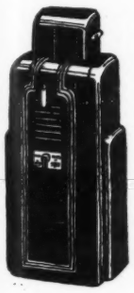
We are not allowed much leeway with the body of the furnace, but we can tie the housing in with the furnace by prestriping a band around the base, close to the floor, with instructions to the erection man to fill in below the stripe with solid black from his touch-up pot.

Now for another example, a "study in limitations." Our furnace control housing was comparatively simple, for the elements to be enclosed permitted of some

juggling. Our next problem, however, is considerably more difficult.

This time we are working for a manufacturer of household laundry machinery, who turns us loose on an electric ironing machine. He holds patents on a clever type of hood that covers up the operating mechanism when the ironer is not in use—which in most homes is six days a week. It is natural, therefore, that he should be most concerned with the appearance of the exterior. He expects to build entirely new dies, so we have a pretty free hand. "Go as far as you like, boys, we want the finest looking ironer on the market."



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So far so good. There are plenty of problems involved, but not of the sort to give us gray hair. The sketches have been presented and approved, wood models have been built from detailed drawings and changed and altered until everyone is satisfied and happy.

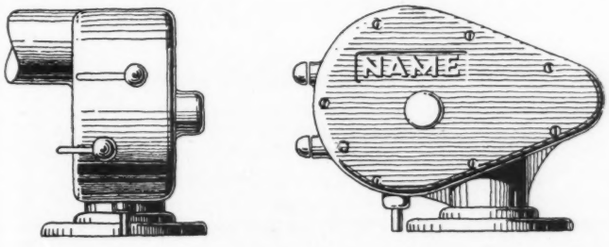
INTERIOR APPEARANCE NEGLECTED

Now comes the rub. We point out that the inside has not been touched. The gear housing is pretty dead looking, the control handles are commonplace—in other words, when the lid is up, when the jewel box is opened, we find nothing but paste gems inside.

"Sorry," says the president. "The dies for the hood and body will use up all the money we can spend on this machine. Of course, if you can do something without its costing any more money, except for a few patterns, go to it."

Now there's a problem! Every designer has heard it a thousand times. "Make it better, but don't spend any money."

No changes are to be made in the gears. Consequently the bosses inside the gearcase, which must be machined to take the bearings, can't be touched without scrapping all the jigs and fixtures. Remember, all the traffic will bear is a few comparatively inexpensive patterns. What can we do under those conditions? Let's have a look at the critter. Here is a front and side view:



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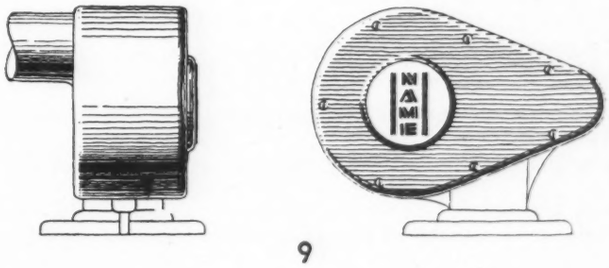
Here is a casing, roughly ovoid in shape with a rather sharply tapering end, supported in a very awkward place by a short pedestal with a flanged base. The front face of the casing has been pushed out (to take one of the bearings) into an ugly boss, which, to make matters worse, is off center. The name of the machine is cast in the housing cover, in ugly block letters. The clutch rod pokes through the sheet metal "floor" of the machine and enters the gearcase from below.

Note that none of the elements we have to deal with bears any *visual* relation to any other part. The ironer *works*, yes, but it might be a lot better looking and still work just as well.

The gearcase cover and the main body of the case have to be surface ground and screwed together with seven screws which show on the outside. There is a fiber gasket and the entire casing is enameled. The enamel covers up the seam.

PROMINENCE OF PART REDUCED

Here are the changes we propose, in order. To give some coherence to the end cover of the gearcase, we find that by increasing its depth about three-eighths of an inch, we can reduce the prominence of the ugly boss which protrudes from it. Then by substituting a raised circular panel, greatly larger than the original boss, and concentric to the large circular end of the



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"egg," we can cover up the bearing boss entirely and obtain a place for the brand name.

Thereby we have killed two birds with one stone. The name is now on a separate label of black and satin-finished chrome, inexpensive to produce. Incidentally, we have made the whole gearcase cover simpler, and hence cheaper to grind and buff.

In the original, the radius around the edges was so generous that the screws bit into the radius. We decrease it so that each entire screw head is on the flat surface (see *Fig. 9*). Where the main bearing, car-

See page 39

● This is the record of an adventure for the quest of Design, the search for data to define its essence, to evidence its variety, and to demonstrate the strange way it colors every activity of life.

● The objective of this study was specifically an analysis of Design, not the collection of material for a discourse on art.

● Had the soft years, when rich opportunities were universal, cajoled the schools into thinking they could roll on as before, waiting until the flurry had blown over? Were the schools conscious of a changing society, more and more mechanized, where commercial interests were important?

● Further, were the young artists being trained to take their places as leaders in the contemporary movements, or were they just to stumble along and fit in as best they could when the school was through with them? The stubborn thought persisted that there was possibly too much theory involved in the general approach to education in the arts; too much "art" and too little design. These questions and discussions, plus the desire to find how other minds reacted to the same problems, started me on a long journey that finally wound its way around the globe. If one stops to consider for a moment, the artist has been at his job, steadily, since man first rose above the beast.

● If our schools are atune to the new order and are able to withstand the blandishments of an aesthetic Utopia, as promised by Ruskin and William Morris, they will be interpreting life at the speed with which it changes.

● The characteristic common to all artists is an interest in design.

● Design is the basic element of all intellectual processes: music, drama, painting, architecture, mathematics, and engineering or science. Just as the skeleton of an animal body is the basis of a complex coordination of muscles, nerves, organs and sinews, which function harmoniously as life, so an idea is a skeleton the dynamic statement of which depends on amplification by a system of co-ordinated elements. This process of development is termed design.

● Contrary to the popular impression, the essence of Far Eastern art is not lavish ornamentation. Its basic strength of design lies in the simplicity of its more common objects and the lesser known works of its artists.

● Where design is vigorous, a deep respect for nature is evidenced through intelligent interpretation; where design falters, photographic reproduction is in vogue.

● The camera, making a simple process of recording an instantaneous impression, can be a great boon or a nuisance, depending on the intelligence with which it is used.

● Design is the key to the production of beauty.

● The school must be judged in relation to the community it serves.

● France created the academic theory of the art school, glorifying the style of the late Italian Renaissance. The present tendency is to glorify a philosophy of art rather than actual accomplishment.

● The museum was instituted as a storehouse for treasure.

● The first social use of a museum was the opening of its doors to the public for enjoyment.

● Modern industrial problems, which should be solved with the help of such bodies, since they are supported largely by public funds, are treated casually.

● Machines can be used as tools to produce beauty and utility. It is useless to fight industrialism in an effort to revivify ancient traditions.

● The museums are suspicious of modern art because they lack confidence in their own powers of analysis and appraisal when unsupported by general public usage. Archaeology affords a more comfortable approach.

● The amusing situation exists in a city very much interested in glass manufacture, that the local museum avoids showing any but ancient glass.

● The distribution of designs for industry is haphazard because business regards the artist merely as a necessary nuisance; his work is bought at the lowest price possible and he has little protection or authority. The maintenance of standards of design must be the responsibility of the artists, for business naturally has but one concern—that of creating profit.

IN ART AND INDUSTRY

A partial list of the subjects treated by Ely Jacques Kahn in the book by the same name published by Chas. Scribners' Sons, New York. Illustrated.

● Once the halo of High Art is removed from the museum it may discover its really vital function—leadership in design for production.

● The Chinese are fine craftsmen, fine workers, as they are found throughout Asia. The very copying they do, even to fool innocent buyers, is evidence of ability of no small order.

● Bali is surprising in that it has avoided so many of the objectionable results of foreign contact. A simple attractive race carries on its culture today.

● Vienna has one of the best art schools, and one that has had a powerful influence on modern systems.

● Beginning in 1900 and through development in France and Germany, the new mode prospered, even though America remained, curiously enough, the one conservative force.

● Swedish decorative arts have been displayed in various exhibitions. It has been suggested that much of the strength of the existing movement comes from the support of the government, together with the realization of manufacturers that good design is good business.

● The French are a people who have always respected craftsmen and artists, and have striven in their schools to meet the demands of the day.

● American schools are remarkable for their number rather than for their accomplishments. One must ignore aid given to the many amateurs in considering the professional training and professional work of artists.

● Since the quality of student material is certainly good, some question arises naturally as to the strength of the school.

● Boston has a distinguished position in our cultural life, though her art schools, on close inspection, are less inspiring than they might be.

● The schools devoted to design for the machine do relatively little to train designers.

● Frank Lloyd Wright is conducting an interesting experiment in Wisconsin.

● Our schools of architecture are fairly uniform as to procedure and do little to teach design in its very broad scope.

● The art schools look askance at laboratory work and application of their work to material.

● The technical schools, on the other hand, have a tendency to concentrate on machine technique, and encourage copying of old patterns as against fresh design.

● Design agencies have great importance in bringing the designer to the producer, even though they do not always rank good design over the publicity value of a name.

● Design would seem to be the keynote of what the school must strive for.

● The schools are, on the whole, conservative, and object to much variation from accepted systems for practical reasons of established order and cost. Industrial problems, however, are at hand and need attention.

● We know that the bulk of American architecture knows little architectural assistance. The architect, if he is a designer, should be qualified to help and also be effective in fields of general design.

● We suffer from amateur arts and crafts depots, reproductions of historical pieces, antiquarians dealing in anything that is not modern, and decorators' shops that do little justice to those decorators who really do decorate and incidentally design.

● Happily, we are getting away from the theory that for an article to be good it must be imported.

● We little realize the strides that American design has made, not only in industry but in many fields of production devoted to so-called objects d'art. Some of these have been designed by Europeans or Americans trained in Europe.

● The laboratory where design and execution go hand in hand is not necessarily a wild experiment—it is merely curious that we ignore what has happened for centuries before and what most other countries of the world take for granted.

● Actually, the child that has talent is very often checked in its normal growth by being jammed through a machine that turns out people of a type—we are too much interested in quantity, helping the amateur with a taste for art.

RUTH REEVES

By HARRY V. ANDERSON
REPRINTED WITH PERMISSION
FROM DECORATORS' DIGEST

● The amazing thing to anyone who has followed Ruth Reeves' designing career is her various "textile periods". Since her debut into our contemporary textile world every source with which she has come into vivid contact whether it was landscape or a still life, her children, poetry, old American botanical books, the city's architecture and life, her Siamese cats, primitive American period sources, Renaissance polychromic floors or 18th Century English wood carving—they were all grist to her mill. In other words, life about her became her "source material".

One remembers that first American Designers gallery exhibition in 1929. From her little stone house in New York City, New York, came the printed table cloth, "Petit Dejeuner" (Miss Reeves, who is Mrs. Donald R. Baker in conventional life, had just come back from seven years of living and working in France); and the amusing toile, like a fine engraving of bathing the baby in a welter of children, neighbors, cats, and domestic factotems in front of a pot-bellied station stove, was one of the outstanding "pieces" in this group. Here were breakfast still-lifes and family ceremonies, common to every country household, but put down in textile pattern by the artist who had drawn her sources from her sketch-book, to quote Miss Reeves, "the most fundamental book for the industrial designer to keep on tap, and always his most creatively fruitful form of research."

Not only was Ruth Reeves' own life recorded in her patterns, but in this same exhibition was shown the seven-foot hand-printed wall panel, the first of a series of many which she has since printed, of the Van Orden family. At the second exhibition of the Gallery one remembers, too, the Delano Longfellow past and current family history draperies. This illustrative record of a person or a family incorporated into a useful work of art is as old a story to the artist as the illuminated manuscripts and the stained glass windows of the cathedrals of the middle ages, or the French and English toiles of the 17th Century. But it remained for Ruth Reeves to be commissioned to print a modern textile design with this theme.

In 1930 came the big International exhibition of glass and cotton textiles sponsored by the American Federation of Arts and given its first showing at the Metropolitan

Museum of New York City. To cooperate with her in this experiment of such enormous textural as well as decorative possibilities, Miss Reeves applied to W. & J. Sloane.

For them the project was purely promotional. For Ruth Reeves, it was her initial chance to experiment with fabrics of which she had had no previous printing knowledge. In the main her subject matter was much the same here as in the American Designers Gallery "bracket", .i e., her paintings and her sketches. But it was subject matter conditioned by her self-imposed limitation of positing imaginary rooms in a country house where her given textile pattern would presumably have meaning. Then there were the actual textures she found (often discovered) in the cotton market and which in many instances helped and at the same time limited her in deciding her subject matter. Altogether it was a big jump ahead in textural experience from the linen silk period of her earlier expressions in 1929.

As an actual fact in this particular output, when Miss Reeves came to count up, she had used thirteen different types of cotton fabric to carry her various designs. She was the first to print a drapery design on terry cloth, for instance; and then there was the experiment on cotton field with the design in one color combination on one side and another on the opposite side; just what for is probably a mystery to Miss Reeves herself, although at the time she stoutly maintained that such an idea might be worked out in portieres giving out into two rooms of different color schemes. Its *real* raison d'etre was probably Ruth Reeve's constant passion to experiment!

In this group too there was the Botanical print of various American wildflowers, taken from American engravings of 1870. This Miss Reeves printed on white aeroplane cotton in black, pink, yellow, and blue, the three colors being for the first time in the history of indigosol dyeing, consciously superimposed on each other to make green and lavender and orange thus increasing the range of printed colors with the minimum number of Screen blocks.

"Homage to Emily Dickinson" was printed on cotton velvet, as well as on marquisette. At one time she experimented with material largely used for potato sacks but which has since taken a very definite style place in the decorative fabric world; then as now it was called "Osnaburg." "Polychrome," a design inspired by the polychrome floors in Renaissance paintings she printed on a vigorous fifty-inch curtaining which was what the ordinary crinkly cotton crepe looks like before it has been "boiled off" and put into its thirty-inch crinkle.

Eight of these Ruth Reeve's designs were later acquired by the Victoria and Albert Museum of London for their permanent textile exhibition.

The 1931 exhibition, given under the sponsorship of Audac at the Brooklyn Museum marked a sudden departure by Miss Reeves from what might be termed her humanistic period of textile designing. Abstract forms and pure textile pattern for its own sake took hold of her imagination. Perhaps this was due to an advance premonition of the forms and textures of the Guatemalan flowering. At any rate her own epoch's approach to simplicity of living and so of simplicity in its ornamentation in the decorative arts sent her to the primitive design sources of the Americas, and out of that contact came such patterns as "Peruvian", "Costa Rica", "Double Headed Serpent", and "Yaxichilian". "Ceres" and "Circus" in this exhibition group harked back to the humanistic period, but they were minor, albeit charming textile expressions, in comparison to this "primitive series".

In 1932 came the decoration of the Radio City Music Hall, and in the meantime came the birth of Ruth Reeve's third child. It was in the hospital at Nyack that a miniature studio was set up, to the consternation of doctors and nurses, and Ruth Reeves (Mrs. Baker to them!) there made her preliminary croquis for the sixteen foot repeat pattern depicting the history of the circus and the music hall for the Music Hall's wall tapestry. In every way this design is a tour de force from its studio beginnings in the hospital to its enormous sixteen foot horizontal repeat in the gigantic theatre. The pattern for the carpet in the Grande foyer of the Music Hall is hers also.

Two important commissions were executed by Miss Reeves in 1933. First the exquisite acid bit etching illustrations for George Moore's "Daphne and Chloe" published by the Limited Editions Club—another technical printing feat, but on paper this time instead of cloth; and with nitric acid and copper plates instead of dyes and screen blocks. These illustrations are done with great love, as the Hallians would say, and demonstrate the ability of all really fine artists to move easily, as they did in the moyen age of the Renaissance and as the best of them do in France today, from easel painting to ornamentation of the useful arts and back to easel again. These illustrations show Miss Reeves as a draughtsman of the highest order and in control of a difficult and highly circumscribed medium. For an artist to make one etching which is perfect in the desired width and depth of line is one thing, but to make a series of twenty-four etchings, which must of esthetic necessity to the color of the page and subsequent pages be the same, is a matter requiring something more than excellent craftsmanship; it has more to do with the essential character of the craftsman and artist.

Came the second large commission in the summer and autumn of 1934. The Gardner Foundation in looking over the various fields in which to place their annual grant for creative endeavor decided it should go to Ruth Reeves for textile exploration of one kind or another.

Living near the Hudson River Miss Reeves felt it was an environment which she had observed and therefore knew in the deepest sense of the word, and so on a series of paintings of the Hudson River she decided to base a series of modern landscape toiles. The commercial result was not the desideratum; if this resulted, so much the better. It was first of all to be a frank experiment for its own sake—even from a pure pattern angle it might quite conceivably not be "right" at all. In any event it meant a long quiet period of painting and of developing new forms "from scratch".

In the spring of 1934 Ruth Reeves went to Guatemala on new textile explorations. Through the generosity which should have (but didn't) come from an industry which has yearly been inspired to fresh points of view by Ruth Reeves' textile experiments, The Carnegie Institution of Washington, financed by the Carnegie Corporation, sent her to Gautemala to study and collect a group of the currently worn textiles of the Maya-stock Indians of that friendly little Republic in Central America.

To the end that this collection might be shown and demonstrated as useful source material for the Industrial Art World of this country, Miss Reeves, after her return from Guatemala, set about in her laboratory-studio adapting to our present-day techniques of printing and weaving by hand the design forms and textures she found in these native hand-woven garments.

In the course of time the exhibition towards which this work was apexing itself, burst upon the New York public, February 15, 1935, in Mezzanine Gallery No. 3 in the R. C. A. Building. Modestly enough the invitation read "Guatemalan Exhibition of Textiles and costumes collected by Ruth Reeves under the auspices of the Carnegie Institution of Washington, sponsored by the National Alliance of Art and Industry", and one entered the tiered gallery to find not only the first really sizable and typical group of native Guatemalan costumes ever to be seen in this country (thanks — incalculably far-reaching thanks — Miss Reeves says, to the generous donor of this collection, Edith Ricketson of Guatemala City) but also costumes of extraordinarily lively and spirited figures of wood and wire and papier-mache which Miss Reeves and her associates, with Remo Bufano assisting, worked out into practical and esthetic form. At one end of this gallery and dominating it was a mural by the Guatemalan painter Carlos Sanchez, depicting the costumes and customs of the Guatemalan highland Indians. At the other end of the gallery were actual (and very beautiful) photographs by Henry Colay Gipson of the Guatemalan Indians in their village surroundings.

In the lower gallery the exhibition was given over to Miss Reeve's modern textile adaptations from source material. These were shown with the derivative specimens. Then there was a large collection of the source material itself, all carefully catalogued in terms of geographical regions and type weaves. Here, too, was a native loom, with a photograph of the way it was "worn"; also hanks of trade dyed yarn shown in contrast to vegetable or animal dyed yarns (tied and dyed yarns were exhibited in their different stages of process) and a specimen of the way they looked woven to make a garment. Then one stumbled upon a bowl of native brown cotton with the seed, or group of Honor Spinparn's costume sketches which had originally been made merely as working sketches for the mural and which Miss Reeves had, with great vision of how these costumes might serve the wearing apparel trades, incorporated them into the body of the textile exhibition. Miss Reeves also included a group of machine produced adaptations, one which she worked in cooperation with R. H. Macy & Company.

A description of the exhibition is superflous to these who saw its vigor and integrity and completeness. It is merely to give some small idea of the disciplined understanding and discrimination which Ruth Reeves put into not only her own specialized field of hand-printed fabrics but into the organization of a thoroughly understood and presented exhibition as a whole. From the artist, beginning with the Gautemalan Indian, and continuing to the machine, it is an exhibition which American designers and manufacturers in the textile and wearing apparel fields would do well to study carefully. It was a lively presentation of our native fountain heads of design plus a unique example of our native design talent. Characteristically, Ruth Reeves with her pioneering sincerity in the textile world has pointed the way and a deep debt of gratitude should be ours to the Carnegie Institution for their belief in her undertaking.

For the Industrial designer, perhaps, Ruth Reeves' most important contribution in this exhibition was the constant reiteration and affirmation in her designs of the approach of the artist to his source material. As Lewis Mumford, the art critic, said in his review of this exhibition in The New Yorker, "Miss Reeves with an intelligence and spirit that have been all too rare among textile designers has used this Gautemalan handicraft in exactly the fashion that the work of another culture should be used. (Let our museums of art gather in a circle and take out their notebooks). She travelled among the natives, ate with them, cajoled them, learned from them, and climbed about the ruins of their old civilization. Then instead of copying their patterns, she took some slight suggestion as a starting point for her own imagination, itself raised to a higher pitch by her travels. The result is a series of hangings and dress fabrics that leap out in their distinction and in their fitness to our environment."

These new findings which she has brought back to us are now to be routed throughout the Art Museums

See page 39

HAVE YOU OBSERVED?

By ANNE McPHAIL

How delightful is the cartoon and container of a very new tooth powder, "Albodon." Have you noticed its perfection of proportion? Did you see the beauty of the choice letter forms and the massing of them? Weren't the clean, cool, fresh colors used inspired to make you wish to feel the same way after using? Have you discovered how easy it is to use it? The smoothness of the gadget at the top for opening and closing, the size and shape of the container? Place it on one of your bathroom shelves with the lotions and perfumes and realize how it fits into the scheme of the most exotic or conservative room.

A great deal can be said about the content as to quality and economy but that isn't the aim of this article. I should like very much to have you line up a dozen or so commercial products and note their effect upon you. Soaps, powders, creams and how about foods—in fact all the tools which you use to combine them; the dishes in which they are baked, boiled, and fried—finally served. Let us return, however, to the containers and scrutinize them for qualitative merits.

Commercial advertising is a hard working branch of the arts. It is the field in which art has been thrown, hog-tied, and branded with the most hideous insignias, entitled design. Anything and everything that's produced claims it as its source for its weird existence. An attitude of subservience has been forced upon art to "dress up" a gauche mistake to assume, pitifully, an air of "the artistic" that may appeal to the buying public.

Commerce willingly concedes the rights of art when it is firmly housed behind the solid doors of a museum, open between the hours of now and then. But, when it comes to their precious money gathering devices they know all about it and gainsay no bowing acquaintance of art at their business confabs. There are, however, a spartan few who have the courage of their convictions. These few recognize the vital living part of design in all products, may it be an engine or a tooth powder can.

A bird's eye view of the organization back of the ensemble emphasizes and convinces one of the need of good designing in production. The product to be sold is placed upon a spot. Cold and exacting measurements are taken of its possible sales value. Then, before another move is made, a sales campaign is immediately organized. While the "debutante" is going through a grueling dressing, dressing down, and polishing, her presentation is planned. The article is adjudged satisfactory for the expected use and grade of product. Now then, what is to be worn and how is it going to be announced? The merchandise naturally stimulates a general character: plump jars for salad dressings or delicate, fragile bottles for perfumes and lotions. Plans and scope of the campaign are outlined to include perhaps container, carton, wrapper, and trade mark. Announcements are to be made through newspapers, magazine, street car and bus ads, billboard, window displays, and posters. Through the mail a new letter head, broadsheets, and pamphlets are sent. The campaign may be for one month or six, depending on the merchandise advertised.

The crucial moment has come. The great turning point of success or failure from the art standpoint. The advertiser may have the nose for sales but not the vision for creating the set-up. He may be able to assemble his verbiage but not the final vision in black and white; the pulling together of the conception can be one of two things, good or bad. The finest commercial artist has both the sales sense and the vision with which to create. He sees the campaign in its entirety. The article is presented and the layout material is gathered. A spirit is established for the whole theme.

Each part is planned in relation to the unified whole. The container comes first as the high lighted object. Its shape, height, width, and depth are considered—the breaks within the mass of its form such as the cover, top, or other openings. The functional ease of handling is the backbone of the design created. Samples are made in the rough to give testing evidence of the finished product.

The surface treatment includes pictorial, lay-out, trade mark, color and its values. Suggested sketches are made for the design first, to be printed on the container, or second, as a separate label to be pasted. The cost of processes controls naturally the simplicity or elaborateness of treatment. However, a fine design does not have to be intricate and expensive. A clear-cut symbol of the product is necessary in sending the idea of its value over to the buying public and why it must make the purchase. Great simplicity in a mass of yelling confusion becomes conspicuous in its poised restraint.

When the product is assembled and attains a harmonious perfection, we are ready for the campaign

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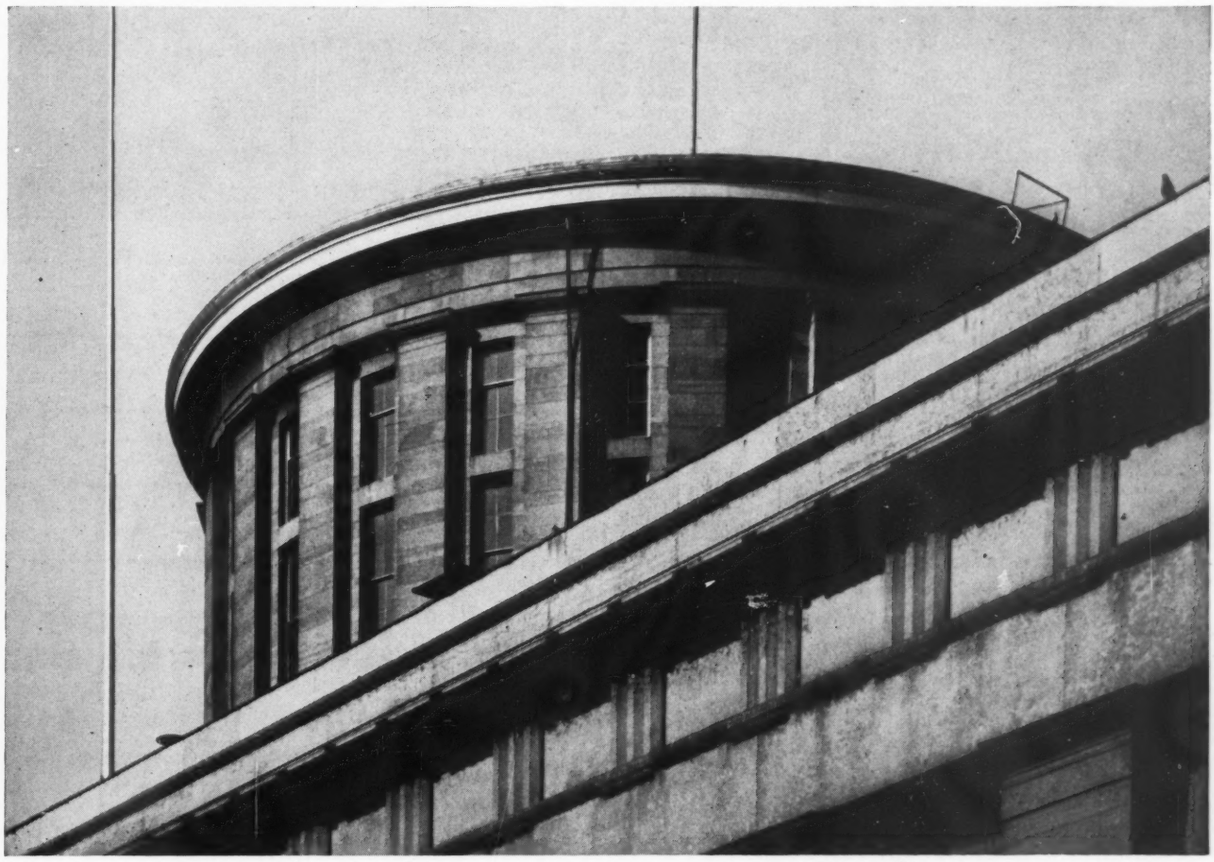
WINDOWS

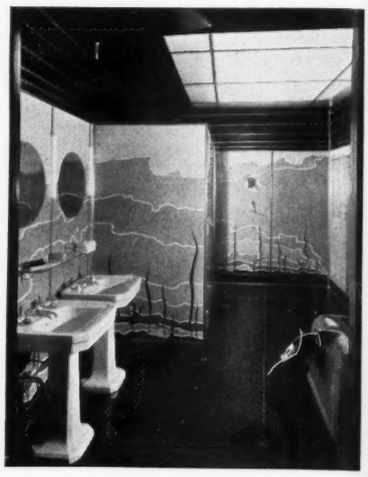
A CROSS-SECTION OF NEW YORK CITY, PHOTOGRAPHED BY FRANK J. ROOS, JUNIOR



OHIO STATE HOUSE

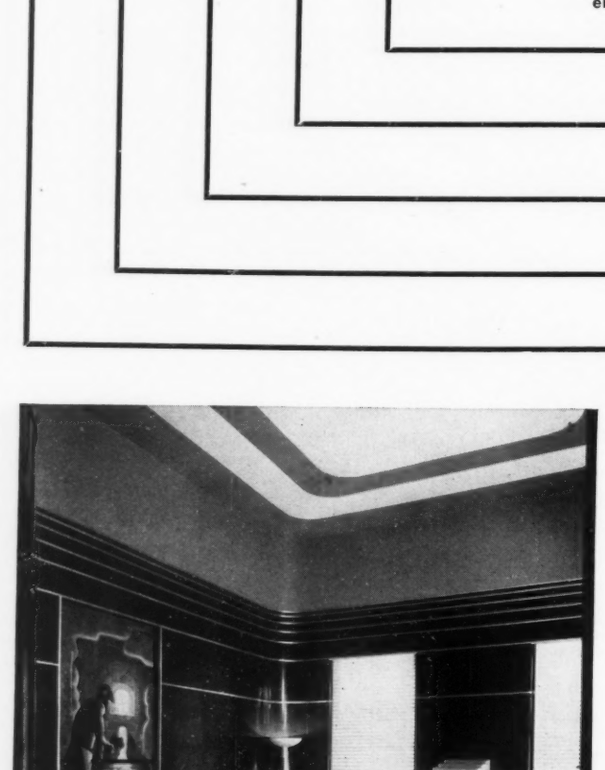
PHOTOGRAPHED BY
FRANK J. ROOS, JR.

NEW MATERIALS FOR INTERIORS



SHOWER ROOM

In keeping with the attractive appearance of the other sections of the laboratories, the locker and shower room is lined with a porcelain enamel mural of marine design. Shower stalls are also finished in porcelain enamel. A new non-skid porcelain enamel floor prevents slipping.



RESEARCH DIRECTOR'S OFFICE

At the left is the Research Director's Office. It was planned as a room with no sharp angles, to demonstrate from a design standpoint how to eliminate the possibility of dust collection. This room is rounded off into large radius corners, introducing curves all running in parallel planes. The walls are egg-plant velvet matt porcelain enamel, the ceiling is a bright green with two bone white stripes. The floor is egg plant linoleum, with a circular bone white stripe following the contour of the room. The modern furniture with the desk and table tops in green porcelain enamel. Upholstering is green with white pigskin fabrikoid. From the Chicago Vitreous Enamel Products Company.

CONCERNING THE NEW INDUSTRIAL DESIGNERS

By BURVIL GLENN

There has been a recent tendency among designers to search through the art remains of past cultures to determine what the artists of those times did to their works to give them the quality of everlasting beauty. The results of this research have revealed that the best designs were made not when civilization seemed to be at its point of highest development, but during the attainment of this development. One reason for this was lack of desire on the part of the designer to exhibit his technical skill. He was more concerned with the manipulation of his material to a desired end, with little or no thought of exhibitionism.

There are many examples of art to substantiate this explanation. The primitive Greeks illustrate this point. The early Greek artists had little in the way of precedent to guide or to hamper them. They used the materials they had at hand and the works which they created show an intimacy with, and an understanding of the materials employed and the objects made. No decorations impeded the use to which the object was put and the resulting designs were not ugly and crude, but were created with discrimination and indicated that the artists were fine craftsmen. The early Greek buildings, pottery, and sculpture remain as great works of art through the ages because they were made with definite consideration for the materials involved and the ultimate use to which the finished work of art was to be put. The same argument holds true of the early Egyptian works of art. One has but to look at them to sense the sincerity of the design and the suitability to function and place in everyday life. The decorative qualities of the early works were very superior to those created when Egyptian culture had achieved its climax. The early Christian cathedrals, sculpture, and manuscripts show the result of the art of another primitive people.

Immediately following the dark ages when all culture and art had reached the lowest ebb there were produced works of art which in their decorative quality, their suitability to both material and function, were far superior to creations of the Renaissance and later periods. The same thing can be said of primitive civilizations. It seems as though they were highly sensitized to the value of design elements. The designs they created were the results of long experiments with materials and had an honest quality which the art of higher civilizations lacked. Over-decoration was not applied because the artist had little desire for excessive ornamentation and rarely for drawings of a pictorial nature.

It is to such cultures as these that designers are turning, not to imitate them, but rather to discover how they solved problems and determined requirements. Present day artists do not restrict themselves to certain methods of designing; they will employ any method which makes use of modern materials and ideas. Methods are usually dependent upon the nature of the material which is to be worked with. The procedure followed when planning a stone object is, of course, different than that used when creating with cloth. Consequently, new materials bring about the development of new methods. With the introduction of so many new materials, the past must be forgotten and the artist must think in terms of the materials at hand. The results of this expansion are particularly noticeable in experiments which have been worked out in interior decoration. A very important consideration the designer must not overlook when planning an object made of a new material is the ultimate function of that object. The influence of innovations in materials will always affect the method of designing to be used.

The recent change in the attitude of the public toward design has placed an entirely new import on the place of function. All art principles are either subordinate to function or used as an aid to its fuller meaning. It must be emphasized that this does not mean that there is no longer a necessity to make objects beautiful. Aesthetics is used to make the function more complete. Thus a vase having certain

artistic qualities which make it more beautiful fulfills its function more successfully than another vase which lacks these qualities. It does mean that beautiful objects are now to be made for use rather than for mere decoration. It is this new emphasis on function which places design in the category of essentials to everyday life.

The evolution of the feeling toward function has left its impression not only on the public, but also on the various elements making up the design. These are undergoing a change and combining to bring out the importance of function in design. As one author puts it, "Modern design is the result of our new mode of living, the new materials at our disposal, and in the utilitarian phases of art, the stressing of function." One need not think that modern art is the result of any sudden change. There has always been modern art. Ever since man first made drawings on the walls of caves, designed tools and weapons, constructed clothing, homes, boats, and other objects for the enrichment of his daily life, there has been an art which at the time of its creation was modern. The examples of art which have lived down through the ages, withstood the test of time, and are still looked upon as great works, were all modern in their day. In all of these works, function assumes an important part in the design. With the advent of the industrial revolution and the invention of the machine, confusion and general poor taste resulted in the arts. Only recently has function begun to assume again its rightful place among the design elements and it has reached that place only as the result of fundamental thinking in terms of purpose, form, and color. The first consideration any designer must have, in creating a work of art, is the function the object must perform. Following this the other elements fall into place. Many artists have different ways of expressing this. They say that one must understand his subject in order to interpret it, or he must study his subject. All this means that the designer must have a thorough knowledge of the purpose of the object through study, experiment and insight, and must know the simplest means for bringing this about. Nevertheless, function must not be considered as working alone in design. The finished product must be considered as a combination of all the elements of design. An artist will accomplish this only when he considers in his planning the important place of function.

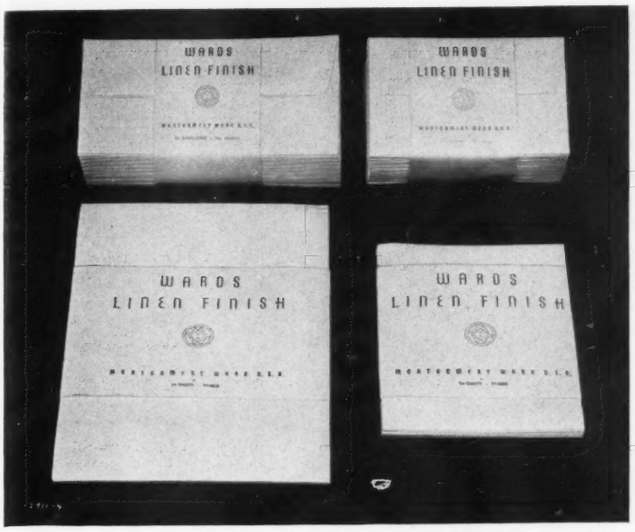
In striving for a new significance, pretense in the use of materials necessarily has to be forgotten. Each material is planned and used in a manner best suiting its purpose so that the result will be an expression of unity required to make it a work of art. Distortion of materials is avoided, such as iron, grained to look like wood, wood made to look like metal, and clay constructed like reed baskets. The integrity of each material is respected and enhanced. Steel becomes steel. Copper is copper. Wood is wood. Paint is used as paint and not marble.

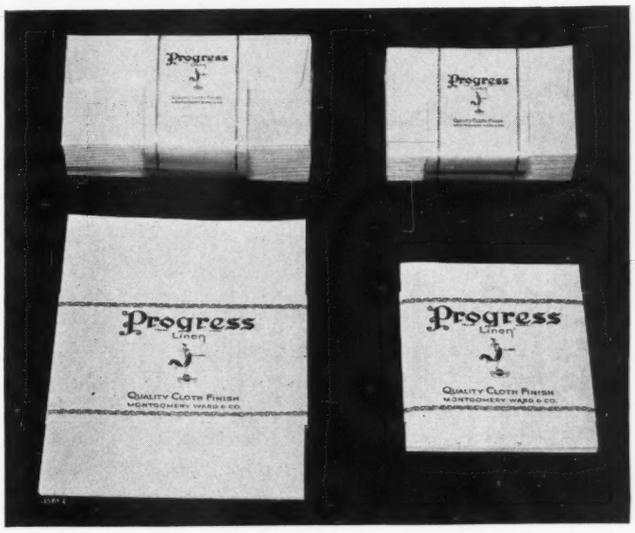
In the past as well as the present, designers have always been influenced by familiar forms; thus, the automobile was first thought of as a horseless buggy, the aeroplane was modeled after the bird, and electric lights still contain many features similar to gas and oil lamps. This similarity has led many designers off the path of creative art. The only way to overcome this hindrance to the progressive development of art is to disregard the past and plan objects with function as the basic principle. Many prominent artists of our present day are doing this.

Only recently has the average person awakened to any desire to completely analyze the functional qualities of the furnishings of his home. Any such analysis has been held back by the manufacturer who seemingly could not afford to make costly replacements in machinery and thus change the styles of home furnishings presented to the public. Until very recently the only real advancements made in interior decoration were in the kitchen and the bathroom. The reason for this is that in these two rooms we have been less hindered by tradition, and manufacturers, spurred on by competition, had to create the best possible designs.

The home has several definite functions. It is a place to which we go to find peace, comfort and beauty —away from the harsh noises and the restless bustle of everyday life. The home itself should be considered as divided into several parts: one for work, one for rest, one for recreation. This does not mean isolated divisions, but rather, functions the home must perform. The function of each room in the house must be considered and the design of the room must be built around this function. Each house should have facilities devoted to the various activities of the home; thus, there should be a library or some similar place devoted to quiet reading or rest. The kitchen should be arranged so as to simplify the movements and the work of the housewife. All consideration should be given to the simplification of housework and the maintenance of sanitary conditions.

Sculpture has in recent years gradually assumed its rightful place in everyday life. We are seemingly passing beyond the stage of civilization where it is necessary to behold sculpture as a thing apart in museums. It is finding its way into our homes, civic life,



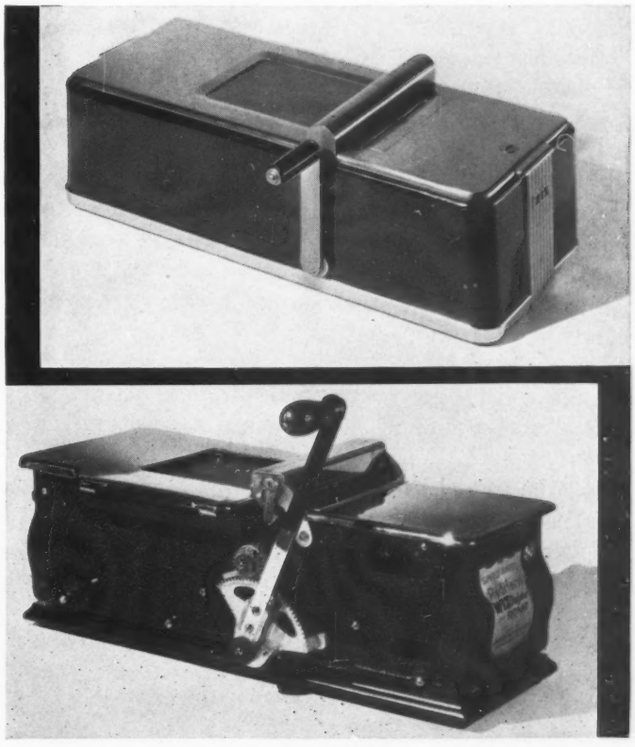


REDESIGNED FOR APPEAL

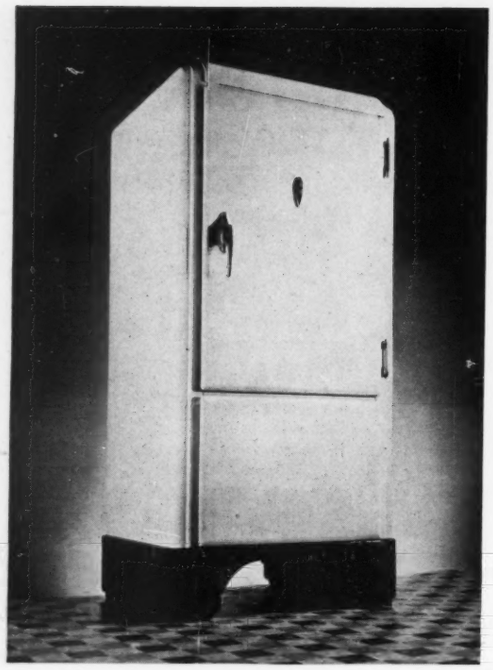
It is necessary only to walk into any grocery, drug, or department store to see the great change in the attitude toward design that has come about in the last few years. The labels with which the objects for sale are marked, the wrappers for commodities, and the boxes or packages made for them have taken on a simplicity at once appealing and in good taste. It is most gratifying to look over the catalogues of the large mail order houses or to walk into a five and ten cent store and notice how many objects there are for sale which would not offend the most fastidious person. In fact there are so many cheap things being manufactured that have a definite aesthetic value that several museums of art now have collections demonstrating this to a public which has been made wary in the past.

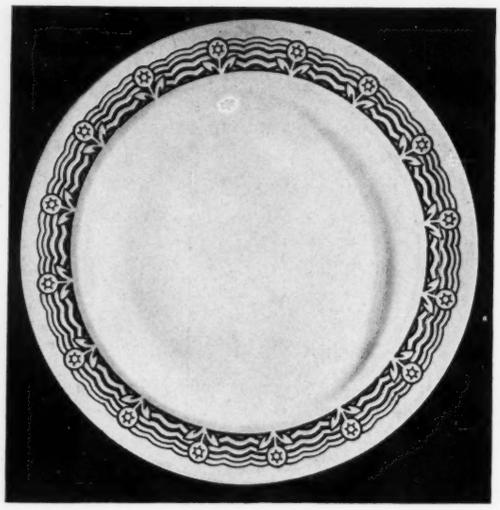
To the left are examples of wrapping bands for stationary, both old and new. By comparison it will be immediately seen that the newly designed bands through dignity and simplicity have a much greater appeal than the old ones.

REDESIGNED FOR MORE EFFICIENCY



Below is an Autographic Sales Slip Register as manufactured for the American Sales Book Company, Limited, by the U. P. M.-Kidder Press Company. Just above it is the Autographic Sales Slip Register as designed by Walter Dorwin Teague. The finish is in black lacquer and chrome with a handle of black Bakelite. The distinguished appearance gained together with easier manipulation leaves very little to be said in favor of the Register it was designed to replace.





A careful study of three commodities with three different materials shown in the group above will reveal certain principles of design to which the designers of today are turning in the planning of many machine-made articles.

DIGNIFIED IN LINE
RESTRAINED DECOR
MORE FUNCTIONAL
ECONOMIC IN PLAN
WELL ORGANIZED

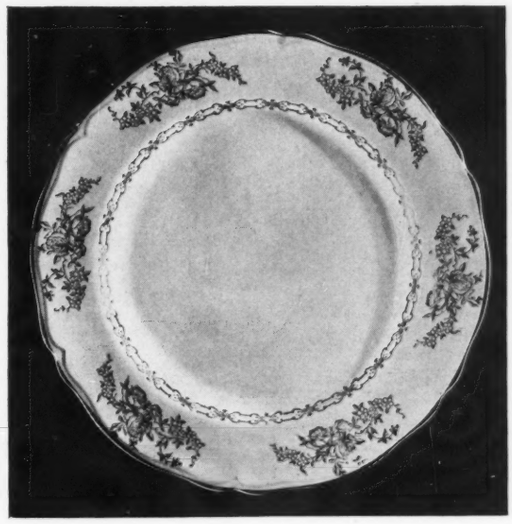
TODAY AND

and into the architecture of our time in a new way. It is now beginning to fulfill a definite purpose. In architecture, sculptural decoration is now applied as a definite part of the design of the building. In Rockefeller Center the decoration in almost every case was created for its own particular place. Exterior carvings and sculptured panels seem to rise naturally from the stone since they, too, were considered as a definitely important part of the structure and not merely as an added bit of decoration to be applied indiscriminately.

Sculpture is finding its way into the home. Small pieces are used not to fill up a space on the mantel, but to give life to an otherwise uninteresting portion of a room, or to emphasize the already existing good qualities of decoration. In civic life, greater care is given to place sculpture such as fountains, public edifices, and statutes so that they present a greater feeling of recreation.

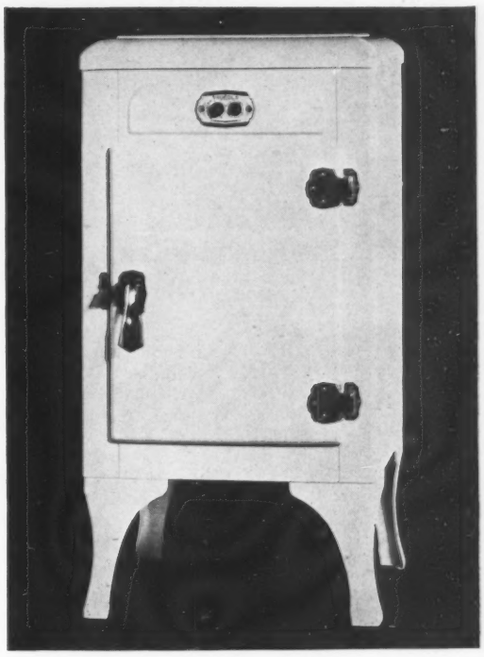
Little regard has been paid to the essential uses for textiles. We now know that woven designs must be treated differently from printed or dyed designs. A rug must have different treatment than tapestries or curtains. Textile designs have a general treatment which is different than that of most other articles. They must be considered as flat; so the design on them should be flat. Consideration should be given to warp and woof of the cloth; that is, the lines of the design should run in such a manner as to emphasize the structure. Designs should also give a feeling for the material and its use. A rug so treated becomes a floor covering, a tapestry fits into its place as a wall hanging or a covering for furniture. Modern machine methods of weaving are creating new types of design which are impersonal in nature and entirely different from the historic, pictorial and personal designs found in the homespuns, tapestries, quilts and samplers of the past.

In the field of ceramics, artists have gone back to primitive forms in their search for functional designs. Research is bringing to light discoveries which now are overthrowing formerly set ideas concerning beauty in pottery. We even question the beauty of Greek pottery which so long held a dominant place in the field of ceramic art. In the making of pottery an attempt is made to bring a feeling for the material to the fore. Pottery shapes are made with a consideration for the job they have to perform. Thus pitchers take on a shape most suitable to pouring; dinner plates are shaped so that they can hold food and be cleaned easily; and each type of ware is treated so as to best fulfill its own particular needs. Form in pottery as opposed to decoration is making an increasing appeal. Ceramic designers now place the greatest importance upon material and function. Applied design is subordi-



YESTERDAY

Comparison of the articles above with those on the opposite page will show that the articles of yesterday were given an overemphasis of unrelated decoration and ornamental detail—a certain lack of refinement in organization.



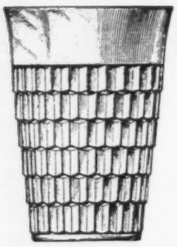
LESS EFFICIENT
OVER-DECORATED
REMINISCENT
LACKING IN TASTE
NOT WELL UNIFIED

nated, and in many cases is not used at all. The form, color, and texture of the piece is sufficient to bring about a feeling of beauty.

In the field of theatre design important changes have been made in recent years. The theatre is coming to be considered as an industry with a definite function to perform. Each part of the theatre has been the subject of analysis. Buildings are planned so that all departments are well organized. The auditoriums are now designed to produce a state of restfulness, of pleasure, and receptiveness to the entertainment. Innovations in stage designing have helped to change the productions from being entirely realistic so that now symbolism, realism, and fantasy are used in stage productions.

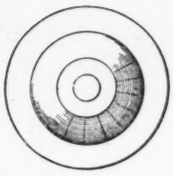
Experiments in types of stage sets have resulted in the constructionist stage, the permanent stage, the revolving stage, and the space stage. All of these are clarifying the stage atmosphere, attempting to bring before the public better stage designs, and as a result a higher type of recreation and enjoyment. The designer no longer limits himself to certain set types, but rather makes the stage design fit the play even if he has to go so far as to replan the whole theatre building in order to get his effect, as Norman Bel Geddes did in "The Miracle" at the Century Theatre.

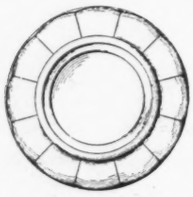
Progressive business means new ideas, and new ideas invariably stimulate progress in design. Forced by competition, far-sighted manufacturers are eager to incorporate good design in their products. An outstanding example of this eagerness is seen in the recent progress of gas stove design. Several years ago the gas stove industry was at a standstill as far as designing was concerned. It had been immobile for over ten years. Stove sales had fallen off until it looked as though the business were doomed. The American Stove Company, in order to stimulate business, introduced a new stove named the Magic Chef. This stove incorporated an entirely new type of functional design. Although it was much higher priced than the other stoves of the same size, the sale of this stove practically monopolized the market. Other stove companies, seeing the success, immediately set about to find new designs for their products. The result was that the best designers available are changing antiquated models for modern functional designs. This is not only true of the stove industry; new fields previously untouched by the designer are now yielding, with the result that many manufactured articles receive individual artistic study. Industry has learned that it must concentrate upon quality as well as quantity of output. The public has demanded this; confidence and buying power go to the industries which incorporate design in their products.

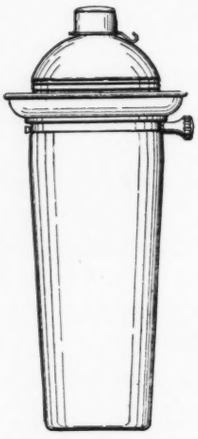


DESIGN FOR A TUMBLER

DESIGN FOR A CUP



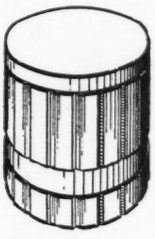




DESIGN FOR A COCKTAIL SHAKER OR SIMILAR ARTICLE

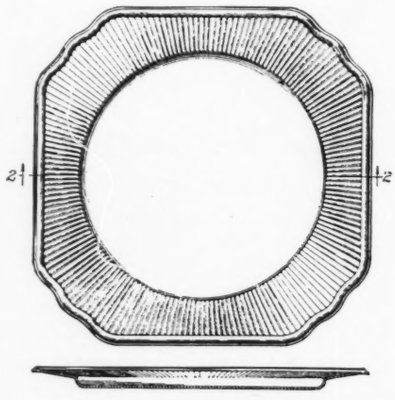
DESIGN FOR A COVERED JAR

DESIGN FOR A JAR

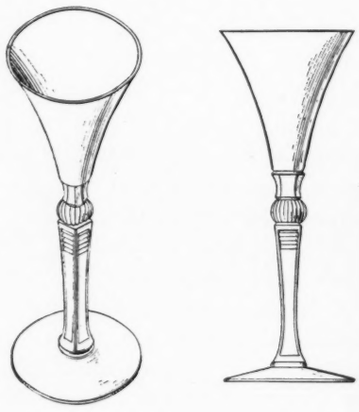


DESIGN FOR A COSMETIC JAR

DESIGN FOR A DRINKING GLASS



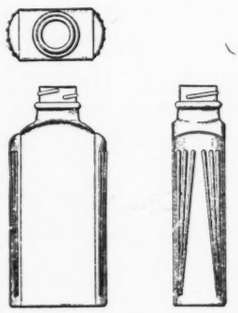
DESIGN FOR A PLATE OR THE LIKE



DESIGN FOR A DRINKING GLASS

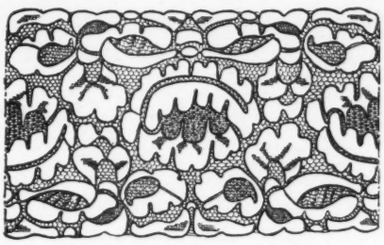
DESIGN FOR A BOTTLE

DESIGN FOR A BOTTLE



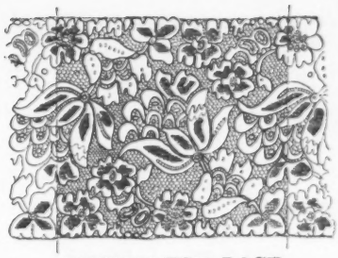
DESIGN FOR A BOTTLE

DESIGNS FOR POTTERY • GLASS • METAL AN



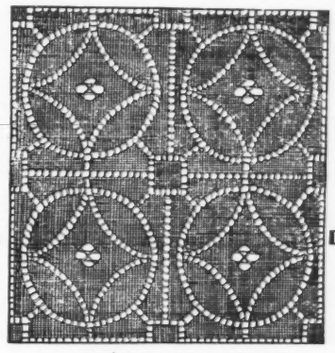
DESIGN FOR LACE

DESIGN FOR LACE



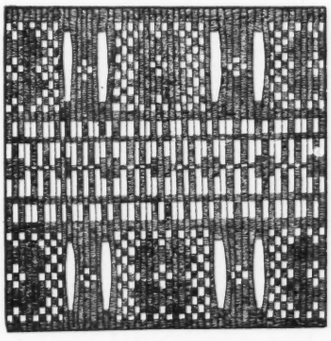
DESIGN FOR LACE

DESIGN FOR A TEXTILE FABRIC OR SIMILAR ARTICLE OF MANUFACTURE

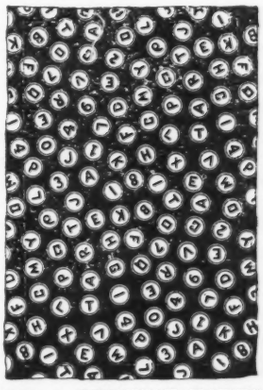


DESIGN FOR LACE

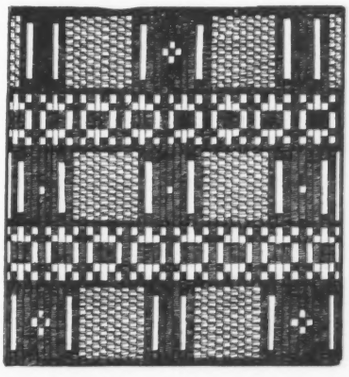
DESIGN FOR A TEXTILE FABRIC OR SIMILAR ARTICLE OF MANUFACTURE



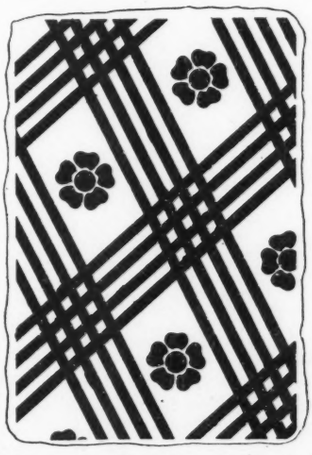
DESIGN FOR A CURTAIN FABRIC



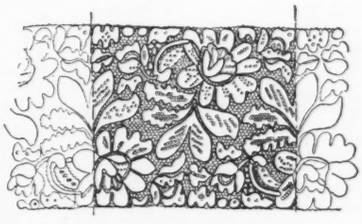
DESIGN FOR A TEXTILE FABRIC OR SIMILAR ARTICLE OF MANUFACTURE



DESIGN FOR A CURTAIN FABRIC



DESIGN FOR A TEXTILE FABRIC, OR SIMILAR ARTICLE OF MANUFACTURE



DESIGN FOR LACE

DESIGN FOR A TEXTILE FABRIC OR SIMILAR ARTICLE OF MANUFACTURE

EXTILES RECENTLY PATENTED

The patent is for a period of three and a half years in most cases. These designs are published here through the courtesy of James Atkins, Attorney at Law, Washington, D. C.

ROOTS OF MODERN DESIGN

Continued from page 7

process, but the product of a machine may be beautiful. Some of the aluminum bowls, pots, pans and kettles had forms most stisfactory to the eye and tremendously more efficient than their age-old prototypes.

The improvement of utensils whose form has been prctically standardized but which are being made more efficient and attractive by re-designing, is a significant movement in the realm of modern design. It follows closely the theorem laid down by Corbusier that a good design comes from many attempts to improve a type form. He pointed to the automobile, where engine, chassis and body and the relation of these elements to each other have been long accepted, so that any change must consist of refinements of the type and not original variations.

The new style floor lamp which throws light from a concealed source on the ceiling also illustrates a type form being slowly improved. This has three component parts—the base, a slender standard and a bowl-shaped reflector at the top. Several attractive and successful examples have already appeared.

Knives and forks, whether kitchen ones or silver for the dining table, illustrate the rapidity with which design changes. Within a few years have appeared the longer handle and shorter blade; and variations of the handle to provide greater ease in holding. The proportion and essential grace which table cutlery should possess have been carefully studied in these new models. In the early development of the fork it took a century to change from the two-prong to the the more convenient four-prong example; and from the curved horn handle designed for grasping tightly to a lighter, straight one planned to be held lightly and gracefully.

Light is thrown on modern design by some of the critical comments appearing in books, magazines and newspapers. Good examples should of course be studied, and some of the books in the field are worth reading. These help to understand the background, which is difficult to do partly because we are in the midst of it. European critics with the perspective of distance had to open our eyes to the new truths embodied in some of our early modern architecture. Appended is a short list of valuable books, designed to be suggestive, however, rather than complete.

Art and Industry. Herbert Read. Harcourt, Brace, 1934.

Industrial Design. Holme. Studio, 1934.

Design in Art and Industry. Kahn. Scribners, 1935. See pages 22-23.

The International Style. Hitchcock and Johnson.

Modern Architecture. Hitchcock.

Towards a New Architecture. Le Corbusier. Payson and Clark.

HAVE YOU OBSERVED?

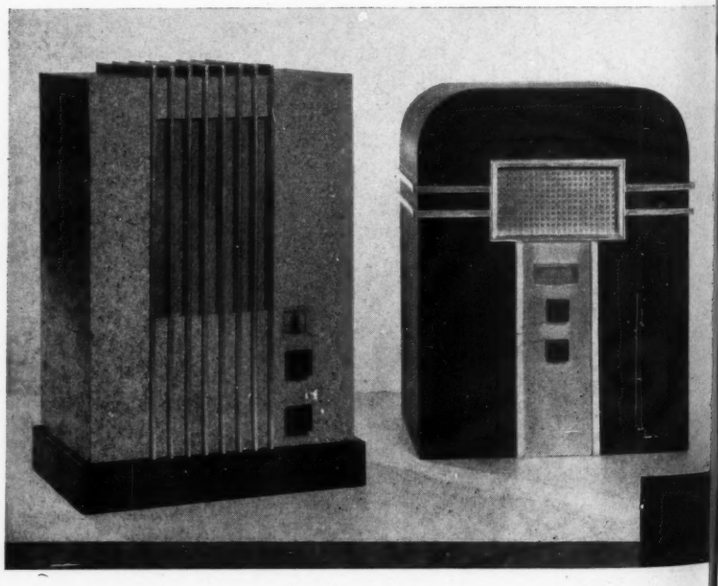
Continued from page 27

lay-outs. The qualities of the container design are carried over into the advertising. The character of the type for lay-out, designs for massing, pictorial, and colors. There should be a definite linking together of all parts of the campaign. The emphasis is governed by the ad. The newspaper should be short, snappy and very much to the point, and, one point at a time. Magazines are read with a little more leisure, therefore allowing more detail to be given. Billboards should be extremely simple and massed, with rapid readability as their aim. Strong dark and light contrast with dashes of brilliant color to hold the interest. Billboards should never be loaded with laborious detail. Impressions are gained from fast moving automobiles, street cars, and buses; on the highways they honestly are not read. The designs for the street car and buses may be more elaborate but a smart advertiser sticks to the simpler ones. Mailing data should be light and rapidly read to hold it from the wastebasket a second longer than the usual response.

As one wades through the many phases of advertising it comes to mind more keenly the realization that art, in selling, is the spark that makes it live. The product sold may be lifted out of the humdrum to the heights of dramatic success by a whisper if it is cleverly done. The leaders of this new and superior commercial designing that produced "Albodon" should be commended. What determination it took to battle through the wilderness of daisies and petunias on talcum powder boxes, guiding art with chivalrous respect in commercial advertising to the heights it has reached today.

RADIO CABINETS

DESIGNED BY PUPILS OF THE CHOUINARD SCHOOL OF ART, LOS ANGELES, CALIF.

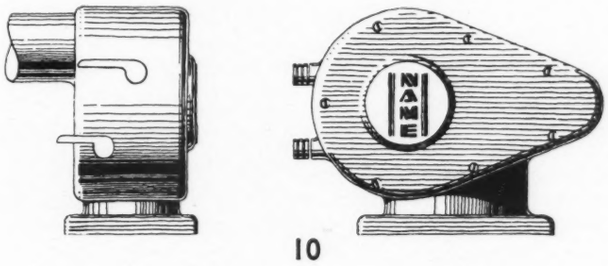


DESIGNING FOR APPEARANCE

Continued from page 21

rying the machine shaft, joins the gearcase housing, we had a bad condition because the cylindrical form ran flush into the gearcase, and there were two different radii trying to meet and not getting along very well together. We increase the overall size of the housing slightly, enough so that with the new small radius at the edge, we now have a distinct ridge where before was a mushy, indefinite shape. (Compare *Fig. 8* and *9.)*

Now for the pedestal. In place of the single cylindrical pedestal, badly off center (so that it does not appear to carry the weight of the casing above it), plus the clutch shaft, we design a pedestal which takes in both elements, having a base which, in plan view, is rectangular, instead of circular, thus harmonizing with the entire rectangular design of the ironing machine. The final result is as follows:



10

After a few clean-up jobs, such as redesigning the chrome-plated control levers and carefully shaping them so that they fit the thumb perfectly, we are through. Total cost—a few new patterns and a name plate. Total effect—now the hood can be raised without apologies. The consumer can no longer say that the machine has a Queen Anne front and a Mary Ann back.

These two brief examples will have to suffice to show how forms can be manipulated to make humdrum products more esthetically appealing. I hope they prove that the artist-designer's approach to a problem is not incompatible with sound engineering practice. In fact they are meant to show that more careful attention to the visual aspects of a machine or product should be of real concern to the engineer. But he must shed for a time his preoccupation with details, and stand away from the problem long enough to see it with a fresh and unbiased eye.

RUTH REEVES

Continued from page 26

and Universities of the United States. It will be interesting to watch the effect this vigorous source material, and the way Miss Reeves has pointed up its textile uses for our own time, will have on the public at large. Again many thanks to the Carnegie Institution for coming to the rescue of a depression-dulled textile period in this country. It is high time we discovered, at no matter whose generous hands and guiding genius, the design sources and design talent we have lying at our doorsteps.

CAR DESIGN MADE OBSOLETE WITH AVAILABLE MATERIALS

By CHARLES B. BOHN

Through the eyes of the metallurgist there is not an up-to-date automobile on the streets today. This is not the fault of the automobile engineer but it is due to the particular situation into which the automobile industry has drifted. Everyone in the industry is aware of the tremendous cost that would result from scrapping our present type of design for something newer and far better. Yet, that cost to the industry would be only a small fraction of the annual economic waste now going on due to the use of the present type of car.

There is no reason, in the light of present metallurgical knowledge, why any automobile should weigh over 2,000 pounds. Yet, on the streets and roads of this country there are over 20,000,000 vehicles in use which weigh at least a thousand pounds more than necessary.

Picture twenty million tons of metal being hauled by car and truck owners over the highways for average annual distances of from five thousand miles up and the figures stagger the imagination! Even the tremendous figure represented by the cost of scrapping present design pales into insignificance in the light of the huge waste of gasoline, iron, steel, rubber and other materials.

The automobile industry cannot be revolutionized in a day or a year but it is the duty of the engineer to progress toward the ideal. To do this, he must take advantage of the materials available. If he can design a 100-horsepower engine which will weigh 250 pounds without loss of reliability, strength or any other desirable features, then why should he design the engine to weigh 500 pounds? While it is true that the matter of initial cost would be high, still we are selling more and more high price cars as we are coming out of the economic depression and there are plenty of those who would buy automobiles with such engines if they were available. From the metallurgist's standpoint they are available.

GILBERT ROHDE HEADS DESIGN LABORATORY

The coming of the New Year witnessed the Design Laboratory on the threshold of its career. It is a school run under the protection of W. P. A. with free tuition to those students who cannot afford to attend one of the private art schools. The Laboratory is directed by Gilbert Rohde, one of America's finest industrial designers. The advisory board is as follows: Alfred Auerbach, Richard Bach, Frederic C. Blank, Sidney Blumenthal, Louise Bonney, Holger Cahill, Harvey W. Corbett, Donald Deskey, Henri Didisheim, George Eggers, Adolph Glassgold, Percival Goodman, George Hellman, Ely Jacques Kahn, Frederick Kiesler, William Lescaze, Raymond Loewy, Earl F. Lougee, Audrey McMahon, Artemas Packer, Ralph Pearson, Austin Purves, Jan Ruhtenberg. George Sakier, Meyer Schapiro, Lee Simonson, Alexis Sommaripa, Eugene Steinhof, Walter R. Storey, Walter D. Teague, Russell Wright, Philip Youtz, and William Zorach.

The faculty has been carefully chosen and is lead by Mr. Rohde, himself, who with other faculty members will teach design. It is most interesting to note that Ruth Reeves is on the staff.

Design, textile printing and weaving, painting, sculpture, graphic arts, metal, wood, pottery, and photography are the courses listed. In addition to the courses given, there will be weekly lectures and informal discussions by editors, artists, designers, architects, photographers, museum heads, retailers, and manufacturers. All of these persons will be those who excell in their various fields of activity.

A very concise description of the school is given in its brochure which says, "the design laboratory is a free school for instruction in industrial design, graphic arts and fine arts, established by the federal art project of the works progress administration. It is open only to those amateur and professional students who cannot afford to attend private art schools.

"Created to supply a hitherto unfulfilled and pressing need in America, the school emphasizes coordination in the study of esthetics, industrial products, machine fabrication and merchandising. It seeks to train designers, not specialized craftsmen, by correlating thorough instruction in the general principles of design and fine arts with shop practice.

"Emerging from a modern technique of living, all design, whether for ash trays or railway trains, must synthesize to the utmost beauty, function, fabrication and saleability, instead of the existing artificial distinction between interior decoration and designing of mechanical objects, courses in the school are grouped according to present day trends in fabrication and the common spirit of design. In this manner, wood, metal and plastics are treated as a unit. Likewise, designs for lipstick cases and automobiles may be included in one course, for materials, tools and even designs are similar.

"No rigid course of instruction is followed; the curriculum is based on the experimental procedure of a research laboratory. Development of ingenuity and esthetic judgment in the use of materials is limited only by the imagination of instructor and student.

"Shops are equipped with hand and machine tools so that students may learn the limitations of both. Free experimental production in interior architecture, metal, ceramics, glass, plastics and textiles, will figure prominently in shop work. Advanced students will have the opportunity to participate in designing and production for use, as the faculty includes well known and successful practitioners who bring to the classes their daily problems in the manufacturing field."

WALTER DORWIN TEAGUE DESIGNS GLASS

In the belief that the next few years will see glass more strongly emphasized in building and decoration than ever before, the Pittsburgh Plate Glass Company has retained the services of Walter Dorwin Teague, noted designer and decorator, and his staff, according to an announcement of the company. Mr. Teague's work will consist chiefly of research and design in developing new uses for glass and new designs in glass.

Mr. Teague has also been retained by such other outstanding firms as Eastman Kodak Company, Ford Motor Company, Texas Company, and his work in their interests has gained him wide fame. Some of his better known accomplishments have been the exhibits in the Ford Building at a Century of Progress, and the designing of fifty modern streamlined coaches for a prominent eastern railroad company.

"The entire trend of modern design is such as to make glass an ideal material for both external and internal decorative use in building construction," Mr. Teague said, in commenting on his new appointment. "After going through the Carrara, Plate Glass and Store Front Metal plants of the Pittsburgh Plate Glass Company, I am impressed by the enormous possibilities of these materials. I find on close study that they are plastic and versatile beyond anything I had imagined, and have great undeveloped fields of application. Glass in itself is one of the most beautiful materials that ever has been produced, and the variety and scope of its applications, made possible by the developments of the Pittsburgh Plate Glass Company, open up a fascinating field for the architect and designer."